EFFECTIVENESS OF TOPICAL APPLICATION OF FRESH ALOEVERA VERSUS GLYCERINE MAGNESIUM SULPHATE ON CHILDREN WITH PHLEBITIS AT GOVERNMENT RAJAJI HOSPITAL, MADURAI.

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In partial fulfillment of the requirement for the degree of

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CERTIFICATE

This is to certify that this dissertation titled **"EFFECTIVENESS OF TOPICAL APPLICATION OF FRESH ALOEVERA VERSUS GLYCERINE MAGNESIUM SULPHATE ON CHILDREN WITH PHLEBITIS AT GOVERNMENT RAJAJI HOSPITAL, MADURAI''** is a bonafide work done by **Mrs. R. LALITHAMBIGAI,** M.Sc (N) Student, College of Nursing, Madurai Medical College, Madurai - 20 , submitted to **THE TAMILNADU DR.M.G.R. MEDICALUNIVERSIY, CHENNAI** in partial fulfillment of the university rules and regulations towards the award of the degree of **MASTER OF SCIENCE IN NURSING, Branch II, Child Health Nursing,** under our guidance and supervision during the academic period from 2016-2018.

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ABSTRACT

Title: Effectiveness of topical application of fresh aloevera versus glycerine magnesium sulphate on children with phlebitis at Government Rajaji Hospital, Madurai **Objectives:** To assess the level of phlebitis among children with phlebitis at Government Rajaji Hospital, Madurai. To evaluate the effectiveness and compare topical application of fresh Aloevera in group I and Glycerine Magnesium sulphate in group II. To associate the level of phlebitis among children with socio demographic variables and clinical variables. **Hypotheses:** There is a significant difference between the pre and post test level of phlebitis among children. There is a significant difference between the post test level of phlebitis. There is a significant association between the level of phlebitis among children socio demographic and clinical variables. **Methodology:** True experimental - pre test post test design was used 60 subjects selected by simple random sampling for group I (fresh Aloevera) and group II (Glycerine magnesium sulphate) intervention was given three times daily for 2 days **Results:** The study revealed that group II had more (36.8%) reduction score of phlebitis level than group-I. **Conclusion:** Application of glycerine magnesium sulphate was more effective than fresh Aloevera among children with phlebitis.

Key words: Phlebitis, fresh Aloevera, Glycerine magnesium sulphate

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CHAPTER - I

INTRODUCTION

“The art of medicine consists in amusing the patient while nature cures the disease.’’

-Voltaire

Sharp is the grief of a child: Take it from him

Soft is the heart of a child: Do not harden it

- Pamela Glenconner

Children have a direct effect on their overall development and on the adult they will become. That is why understanding the need to invest in very young children is so important, so as to maximize their future well-being. Children, particularly poor and minority children, are not faring as well as the public might think. The current and future prospects of these children, and the prospects of the nation as a whole, are reduced as a result. The nation needs to consider the significance of statistics such as these and adopt prudent policies to improve children’s health if it is to successfully maximize the potential of all its children and ensure the future health of the nation.

Child development refers to the process through which human beings typically grow and mature from infancy through adulthood. The different aspects of growth and development that are measured include physical growth, cognitive growth, and social growth. Child development focuses on the changes that take place in humans as they mature from birth.

There are various definitions of periods in a child's development, since each period is a continuum with individual differences regarding start and ending. Some

age-related development periods and examples of defined intervals are newborn (ages 0–4 weeks), infant (ages 4 weeks – 1 year), toddler (ages 1–3 years), preschooler (ages 4–6 years), school-aged child (ages 6–11 years), adolescent Child development incorporates, physical growth as well as intellectual, language, emotional and social development. Whilst these aspects are often considered separately, in reality each influences all of the others. For example, as the brain develops physically, so intellectual abilities increase. This in turn allows a child to explore their social world more fully, develop their emotional responses to it and the language needed to describe it, but in turn, this exploration directly impacts on further physical brain development.

During the development it self encounter with often illness and hospitalization are the first crisis children must face. Children, especially during the 1 – 5 years are particularly vulnerable to the crisis of illness and hospitalization. A hospital stay can be a stressful experience for a child. Children miss home and normal everyday life. They may experience fear, confusion, and unfamiliarity with events. Children deserve to understand what is happening to them.

In Paediatrics, the installation of intravenous catheters represents the more invasive procedures performed during the hospitalization of children, being used for various purposes and in a variety of situations, such as in hydro-electrolyte imbalance, in cases of blood loss, in multiple organ dysfunction, infectious processes, burns, surgical procedures and in the impossibility of adequate intake of nutrients, electrolytes and fluids .Venous access allows the sampling of blood, as well as administration of fluids, mediations, chemotherapy and blood products.

In this context, the Intra venous therapy performed in children is considered a complex procedure, and may exist determinant aspects in the development of

complications such as type of catheter used, the technique of insertion and catheter stabilization, the insertion site, the characteristics of the infusion solution, as pH less than 5 and greater than nine and osmolarity above 350 mol/L, the time of permanence of the device, among others, in addition to characteristics inherent to the patient such as skin colour, sex, prematurity and certain clinical conditions such as infections, trauma, malnutrition and burns

The complications arising from the Intra venous therapy are classified into local and systemic. One of the systemic complications is sepsis, circulatory overload, pulmonary edema, air embolism, catheter embolism and shock by rapid infusion.

The complication of intravenous insertion site in local complication such as phlebitis, allergic Reaction / Anaphylaxis , hematoma, venous spasm, nerve tendon ligament damage, extravessation, systemic complication circulatory overload, air embolism, systemic infection.

The phlebitis is the inflammation of the vessel, and may be classified, according to the predisposing factor, as chemistry phlebitis, when related to the administration of medications or risk solutions; mechanical phlebitis, which may result from the trauma caused by the catheter in the vessel wall and infectious phlebitis, related to contamination of the solution, the catheter insertion site and device. As signs and symptoms can be observed edema, local heat, hyperemia, fibrous cord in the path of the vessel, pain and exudate output at the puncture site. For the Infusion Nursing Society (INS) the proportion of 5% of phlebitis is considered as maximum accepted for the occurrence of this kind of complication

Peripheral infusion is a stressful procedure for children. It is estimated that over 80% of all children entering hospital to receive IV therapy it is mild, may or may not cause symptoms. Pain, tenderness, redness (Erythema), and bulging of the vein

are common symptoms of phlebitis. The redness and tenderness may follow the course of the vein under the skin. Low grade fever may accompany superficial and deep phlebitis. High fever or drainage of pus from the site of Thrombophlebitis may suggest an infection of the Thrombophlebitis (referred to as septic Thrombophlebitis). Palpable cords along the course of the vein may be a sign of a superficial clot or superficial Thrombophlebitis

Superficial Thrombophlebitis is usually an easily diagnosed condition, it may be an iatrogenic, resulting from intravenous catheter or infusion of solutions.

The treatment of Thrombophlebitis consist of self-care steps that include applying heat to the painful area and using an over-the-counter non steroidal anti-inflammatory drug (NSAID), medications like anticoagulant support stockings and bypass surgeries.

Aloevera is an important and traditional medicinal plant being used various medicinal purposes of reduce dental plaque, reduce constipation, lowers blood sugar levels, act as antioxidant and antibacterial properties, helps to treat canker sores, accelerating the healing of burns and may improve skin and prevent wrinkles.

The application of aloevera Increased the collagen content of the wound Aloevera is effective in preserving skin circulation increasing the breaking strength of resulting scar tissue in patients. Aloevera has cohesive effects on the superficial flaking epidermal cells by sticking them together, to soften the skin anti-inflammatory activity, effects on the immune system, moisturising and antiseptic effects

Magnesium sulphate as a medication is used to treat and prevent low blood magnesium and seizures. It is also used in the treatment of torsades, depointes, severe asthma excaberations, constipation, and barium poisoning.

The application of Magnesium sulphate It is applied to inflammatory skin condition. It also applied to promote healing of wound and also withdraw pus and exudates by osmosis. Magnesia plays an important role with regard to neurochemical transmission and muscular excitability, it reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction, inhibits Ca^{2+} influx through dihydropyridine-sensitive, voltage-dependent channels. This accounts for much of its relaxant action on vascular smooth muscle.

Glycerin is moisturizes the skin and cleanses. It also forms a protective layer that helps prevent moisture loss. It is applied to inflammatory skin conditions such as boils and carbuncles. It is also applied to promote healing of wound and ulcers to withdraw pus and exudates by osmosis. It is a nontoxic, which makes it safe to be used as a skin product specifically for children and babies.

Glycerine magnesium is an effective solution prevents bacterial growth thoroughly in osmotic action also called bacteria drier, it is effective for cleaning heavily infected ulcers and wounds, inflammatory skin conditions such as boils, carbuncles. It withdraws pus, exudates by osmosis. It is non-toxic, which makes it safe to be used as skin products manufactured specifically for children and babies.

Glycerine is an organic compound, which is a polyol compound and is odorless. It moisturizes the skin and cleanses. It instantly kills all the bacteria as soon as it comes in contact with the bacteria

1.1 Need for study

The highest prevalence was in East Mediterranean (11.8%), followed by the South East Asia (10%), Western Pacific 9% and Europe 7.7% (Mayon-White, 1988).

In International level Infusion phlebitis among an Americans had 36 million hospital stays in 2000, and about 18 percent of these stays were children and adolescents 17 years and younger. Among them children and adolescents accounted for 6.3 million hospital stays or 18 percent of all stays, adults accounted for approximately 30.0 million hospital stays, about 82 percent of all stays. Department of primary health and social hospital stated a report over the ten calendar years 1997 to 2006 there were a total of 1,566,829 unplanned admissions in children aged under 1 year, 2,115,664 in children aged 1–4 years and 1,118,011 in children aged 5–9 years in England The unplanned admission rate for all children under 10 years old increased by 21.6% from 73.6 to 89.5 per 1000 children. This represents a rise in the incidence rate of 18.4% in children less than 1 year, 22.0% in children aged 1–4 years and 15.1% in children aged 5–9 years.

Recent studies showed that in 2006 over 38 million patients where admitted in U.S. hospitals. In this total out of 2.1 million were children under 17 years of age. It is estimated that greater than 90% of hospital stays involve use of infusion therapy which would imply that a staggering 1.8 million plus infusion devices are expected to be placed in paediatric patients alone that year.

Chinese (2010) article reported that, phlebitis cases in a year, June 2008 to 2009 infusion room in our department a total of 61,820 cases were identified in intravenous infusion therapy, in that 213 cases developed phlebitis. Chinese nursing infusion society 2010 reported, based on their clinical data June 2008 to 2010 -35 cases of phlebitis were identified among the patients undergone IV therapy.

In national level showed incidence of infection to be 0.1–0.2/100 catheters or 0.2–0.9/1,000 catheter days.3 Others revealed incidence of phlebitis to be 6.2%, leaking 12.4%, and infiltration 7.4% with a striking conclusion that when Peripheral

intravenous catheters were restarted, the risk of phlebitis is increased by 4.4 times. In addition, peripheral intravenous (IV) phlebitis has been found to be directly related to the medication that the patient received via peripheral access, and to the duration of dwell time, Complicated catheters were found in 141 (39.3%) recruited patients, with a total number of 273 non-mutually exclusive various types of complications (32.4/100 catheters). The total number of complicated catheters was 190 catheters resulting in a CI of 22.56 / 100 catheters, and a DI of 75.84/1,000 catheter days. Phlebitis ranked first among complications, with a CI of 148 (17.6%), followed by pain, 64 (7.6%), leaking, 33 (3.9%) and dislodgement, 20 (2.4%), and extravasations and occlusion, four (0.5%) each. Females showed significantly higher CI of complications than males, 103 (29.4%) versus 87 (17.7%), P=0.00001. This difference was evident for both phlebitis (P = 0.0001) and pain (P = 0.001). The onset time of Peripheral intravenous catheter complications ranged from 30.7 hours (for dislodgement) to 52.64 hours (for leaking). Second day after insertion was the encounter of all complications.

St. John's hospital at Bangalore 2010 reported an average of 240- 250 children irrespective of age were admitted in the paediatric medical ward per month and 92% of them required a venipuncture for reasons such as blood sampling, starting an IV line either for infusion or injection. In surgical ward 45- 50 children were admitted and 99% of them required venipuncture.

In the year 2004, the annual hospital report of Kerala, stated that the incidence of Thrombophlebitis was (78%) in ICU as compared to (30%) in general wards. The study highlighted the cause as lack of physicians, nurses and poor standard of care provided by health care personnel.

In Tamilnadu, The incidence of peripheral catheter related thrombophlebitis is found to be 50% which was comparable with other centers of the world. In this study only grade 1 and grade 2 thrombophlebitis were observed according to the Visual infusion phlebitis score. All patients with peripheral venous catheter should be examined for signs of thrombophlebitis at least once daily. A suitable peripheral vein catheter chart should include date of catheterization, development of warmth, erythema, tenderness and a palpable venous cord. These signs should be examined during every review of the patient. The risk factors identified serve as targets for interventions to reduce the possible complications. The incidence rate found make the medical personnel aware of the care they have to put in during intravenous cannulation.

In Government Rajaji Hospital Madurai it included the incidence and predictors of access site complications (ASCs) use of peripheral venous catheter, length of post procedural hospitalization, discharge status, and 30-day and 1-year mortality. ASC complicated 936 procedures (3.5%). Of these, 74.4% were minor complications, 9.7% were moderate requiring transfusion, 5.4% were moderate requiring thrombin injection, and 10.5% were severe requiring surgery

Thrombophlebitis may lead to dry, scaly and disintegrity of the skin. In order to prevent complications of skin nurses should aware about the managements like medications, moisturizing creams and application of glycerine

From the above information researcher has realized that there is high prevalence of Thrombophlebitis among the children with intravenous therapy. There is a management for the phlebitis with the fresh aloevera or glycerine magnesium sulphate. The method is also very feasible and less expensive. These factors made

researcher to design a study to assess the effectiveness of application of fresh aloevera and glycerine magnesium sulphate dressing on management of phlebitis.

1.2 Statement of the problem

"A study to evaluate the effectiveness of topical application of fresh aloevera versus Glycerine Magnesium Sulphate on Children with Phlebitis at Government Rajaji Hospital, Madurai".

1.3 Objectives

- To assess the level of phlebitis among children admitted at Government Rajaji Hospital, Madurai.
- To evaluate the effectiveness of application of fresh Aloevera in interventional group I and Glycerine Magnesium sulphate in interventional group II among children with phlebitis.
- To compare the effectiveness of fresh Aloevera in interventional group I and Glycerine magnesium sulphate in interventional group II among children with phlebitis.
- To associate the level of phlebitis among children admitted in GRH, Madurai with their selected socio demographic variables and clinical variables.

1.4 Hypothesis

H_1: There is a significant difference between the pre and post test level of phlebitis among children in interventional group I and interventional group II.

H_2: There is a significant difference between the post test level of phlebitis among children in group- I and group-II.

H_3: There is a significant association between the level of phlebitis among children admitted Government Rajaji Hospital, Madurai with their selected socio demographic variables and clinical variables.

1.5 Operational definition

Effectiveness

In this study, effectiveness refers to the extent to which the selected intervention reduces the severity of peripheral intravenous cannula induced phlebitis experienced by the children in both group I and II.

Topical Application

In this study topical application refers to either fresh Aloevera gel or Glycerine magnesium sulphate applied over the skin at the site of vein puncture caused inflammation of vein.

Fresh Aloevera

It refers to Fresh aloevera pulp taken from the bark of aloevera plant and is applied on the skin and rolled with gauze dressing, three times a day (8^{th} hourly) for two days, at (7am, 3pm,11pm) in the group I.

Glycerine Magnesium sulphate

In this study, it refers to a prepared mixture of glycerine magnesium sulphate readily available ointment applied over the site with a gauze dressing on peripheral intravenous cannula induced phlebitis, three times a day(8^{th} hourly) for two days, at (7am, 3pm,11pm) in the group II.

Phlebitis

In this study, it refers to the inflammation of vein, due to IV cannulation among children assessed by the presence of symptoms such as pain, redness, edema,

warmth at the site and limited movements of the extremity which has cannula in situ, by an modified visual infusion phlebitis scale.

1.6 Assumptions

- Children receiving intravenous therapy have varying the level of phlebitis.
- Children with phlebitis may have either fresh aloevera effective or glycerine magnesium sulphate is effective.

1.7 Delimitations

Study is limited to:

- Children with peripheral intravenous cannula induced phlebitis admitted in GRH hospital.
- The sample size is limited to 60 phlebitis children.
- Data collection period is limited to 4-6weeks.

1.8 Projected outcome

The study will yield the outcome of the research effectively that phlebitis can minimized or reduced by fresh aloevera or Glycerine magnesium sulphate.

REVIEW OF LITERATURE

CHAPTER - II

REVIEW OF LITERATURE

A Literature review is a body of text that aims to review the critical points of knowledge on a particular topic of research. (American nurses association) Review of literature is one of the most important steps in the research process. It is an account of what is already known about a particular phenomenon. The main purpose of literature review is to convey to the readers about the work already done and knowledge and ideas that have been already established on a particular topic of research. This chapter explains in detail about the review of literature and conceptual framework used for the study. A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary sources, and as such, do not report any new or original experimental work. Also, a literature review can be interpreted as a review of an abstract accomplishment.

Literature review serves a number of important functions in research process. It helps the researcher to generate ideas or to focus on a research approach, methodology, meaning tools and even type of statistical analysis that might be productive in pursuing the research problem. In order to accomplish the goal of present study an attempt has been made to review and discuss the literature which shall cover the following areas. This chapter deals with two parts:

The literature was searched from extensive review from various sources and was depicted under the following headings.

2.1 Literature review related to incidence and prevalence of children with phlebitis

2.2 Literature review related to application of fresh aloevera among children with phlebitis

2.3 Literature review related to application of glycerine magnesium sulphate among children with phlebitis

2.1 Literature review related to incidence and prevalence of children with phlebitis

Danski MTR, Mingorance P, Johann DA, Vayego SA, Lind J et al USP. (2016) Prospective cohort study was conducted in a Neonatal Intensive Care Unit to evaluate the incidence of complications related to the use of peripheral intravenous catheter in neonates and identify the associated risk factors. The incidence of complications was 63.15%, being infiltration/extravasation (69.89%), phlebitis (17.84%) and obstruction (12.27%). The risk factors were the presence of infection ($p = 0.0192$) and weight at the puncture day ($p = 0.0093$), type of intermittent infusion associated with continuous infusion ($p < 0.0001$), endotracheal intubation ($p = 0.0008$), infusion of basic plan ($p = 0.0027$), total parenteral nutrition ($P = 0.0002$), blood transfusion associated with other infusions ($p = 0.0003$) and other drugs ($p = 0.0004$). Higher risk of developing complications in the first 48 hours after puncture. A study concluded that a high rate of complications related to the use of peripheral intravenous catheter, and risk factors associated with infection, weight, drugs and infused solutions, and type of infusion.

Jisal Saji, Dr. Sara Vergis Korula, Dr. Anna Mathew, Lakshmi Mohan et al (2015) This observational study was conducted on surgical ward of a tertiary care hospital. The Incidence of Thrombophlebitis Following the Use of Peripheral Intravenous Cannula. Thrombophlebitis was graded using Visual Infusion Phlebitis Score suggested by Infusion Nurses Society. It Results In total, 82 patients were recruited with incidence rate of thrombophlebitis of 50%. Among those who developed thrombophlebitis 61% had Grade 1 and remaining 39% had Grade 2 thrombophlebitis. Grade 3, 4, 5 were not found. The study was concluded that Phlebitis is still an important ongoing problem in medical practice. We recommend daily examination of catheters for signs of thrombophlebitis by a health care

personnel. Future studies are to be made to improve the understanding of risk factors for thrombophlebitis especially comorbidities like Diabetes Mellitus and to discover more effective protection methods

Powell (2008) was conducted a retrospective study to determine the relationship between peripheral intravenous catheters, indwell time and the incidence of thrombophlebitis. Thrombophlebitis rating site and tubing labels was performed on 1161 sites. Only 679 had documented indwell time to use average indwell time was 2 days and overall phlebitis rate was 3.7%, however asymptomatic peripheral IV may not need to be removed by regular intervals because they were healthy.

Villacampa (2008) reviewed a national multicentric epidemiological study having the institutional participation of 10 centers in Spanish. In the study 381 complications appeared in the 2701 peripheral catheters studied, which represents an incidence level of 14.11% they reviewed 8700 treatment records. This study proved that the implementation strategy to improve the quality care reduces non instrumental complications. (persistent pain at the entrance point, extravasations or edema, first, second or third degree phlebitis and infections associated with catheters).

Benin. V. Chacko (2007) conducted a comparative study in identifying the complications of catheters in a University affiliated hospital in England .In the study three-hundred and fifty-three intravascular catheters were implanted in 315 patients of a total number of 1,838 hospitalized patients. Out of the 353 intravascular catheters, 26 (7.3%) were intra-arterial, 273 (77.3%) were peripheral, and 54 (15.3%) were central. The median (range) duration of the catheterization was 3 days for arterial catheters, 1day for peripheral catheters, and 5 days for central catheters. Fifty-three showed signs of infection. The results showed that associated with the presence of infection located elsewhere (odds ratio [OR] = 8.7, CI = 4.13-18.3, p<.0001), inappropriate catheter care (OR = 5.3, CI = 2.511.2, p<.0001), inappropriate length of

catheter use (OR= 3.5, CI= 1.4-9.02, p<.01), and duration of hospitalization exceeding 14 days.

Stavros Kakkos, George Lampropoulos, Spyros Papadoulas, Ioannis Ntouvas & Ioannis Tsolakis et al (2007) conducted an observational study to identify the position of peripheral venous cannula and the incidence of thrombophlebitis in the University of Patras Medical School, Italy among 427 patients. The variables evaluated were based on age, gender, cannula size and site of cannula location, and the tool used was structured observation protocol. Chi-square or Student t tests, and the adjusted odds ratios were used to analyze the data. The result showed that the frequency of peripheral intravenous cannula thrombophlebitis was higher in females (OR: 1·91; CI: 1·20-3·03; P < 0·006). The study concluded that the highest incidence was found in patients with cannula inserted in the dorsal side of the hand veins compared to those with cannula inserted in cubital fossa veins (OR:3·33;CI:1·37-8·07; P < 0·001) respectively.

Singh. R, Bhgandry. S, Punk. D & Kathmandu et al (2007) carried out a study on peripheral Intravenous Catheter related thrombophlebitis on 230 patients in University School of Medical Sciences Nepal. The incidence rate of phlebitis rise sharply after 36 hours of catheter insertion. The sites were examined using Jackson Standard of visual Phlebitis scale once a day .Thrombophlebitis developed on 136 patients per 230 patients (ie) 59%. The study was concluded that increase incidence rates of infusion related phlebitis were associated with males compared with females.

Juyaly Biswas (2006) was conducted a prospective study in peripheral intravenous cannula (PIC). In this study total of 123 in patients on the surgical wards had a peripheral intravenous cannula (PIC) inserted during the third day 17 patients out of 123 patients (13.8%) had a peripheral intravenous cannula inserted for more than the recommended maximum of 72 hours. Peripheral intravenous cannula sites

assessed using visual phlebitis scale. The result showed that 19 were scored 1, and 9 of them scored 2(pain at peripheral intravenous site with erythema). The study concluded that Totally 28 patients who had inflammation at the peripheral intravenous cannula site ie, 46.4%, of these 10.7% of cannula site appears to be inflamed which has kept more than 72hours.

Manuel Monreal, Francisco Quilez, Soledad Rodriguez & Nieves Sopena et al (1999) conducted a prospective non randomized study in Joseph Roca Hospital University, to identify risk factors that predict an increased risk for phlebitis. Seven hundred and sixty-six consecutive patients with acute pneumonia receiving IV therapy were selected for the study. They were 308 short lines (51-mm, 18-gauge Teflon catheter), 307 midsized lines (28-cm, 16-gauge polyvinyl chloride catheter); and 151 long lines (71-cm, 14-gauge plain polyurethane catheter). Eighteen variables were prospectively evaluated for their contribution to the occurrence of thrombophlebitis. The results showed that the overall phlebitis rate was 39%. Phlebitis developed in 53% of patients with short lines. In 41% of patients with midsized lines, and in 10% of patients with long lines, and these catheters remained in place of an average (± SD) of 3.0 ± 2.4 days, 4.6 ± 3.4 days, and 7.8 ± 6.6 days, respectively.

2.2 Literature review related to application of fresh aloevera among children with phlebitis

Yulu Gao, Ting Jiang, Shencong Me, Changtai Zhu Yongning, Sun et al (2016) To evaluate the clinical value of Aloevera for the prevention and treatment of Chemotherapy induced phlebitis .Systematic review and meta-analysis was performed. Meta-analysis showed that Aloevera was effective for the prevention of chemotherapy-induced phlebitis. It results showed that Aloevera treatment group for 1st, 2nd, and 3rd degree phlebitis were 0.53 (95% CI: 0.21-1.33, P > 0.05), 0.10 (95%

CI: 0.07-0.14, P < 0.001) and 0.10 (95% CI: 0.03-0.34, P < 0.001), respectively. Aloevera significantly reduced the occurrence of second and third-degree phlebitis. In conclusion, Aloevera has some potential clinical value in the prevention and treatment of CIP, but it still needs further study

Zheng GH, Yang L, Chen HY, Chu JF, Mei et al (2014) To assess the assess the effects of external application of Aloevera for the prevention and treatment of infusion phlebitis associated with the presence of an intravenous access device. This review examined 35 randomised controlled trials and eight quasi-randomised controlled trials with 7465 participants. Twenty-two trials with 5546 participants were involved in looking at prevention of phlebitis with Aloevera, and a further 21 trials with 1919 participants were involved in looking at Aloevera for the treatment of phlebitis. The included trials mainly compared external application of fresh Aloevera alone or with another non-Aloevera treatment such as a wet compress of 75% alcohol or 33%, 50% or 75% $MgSO_4$ with no treatment or the same non-Aloevera treatment. It results showed that Aloevera was compared with 50% $MgSO_4$ (RR 0.26, 95% CI 0.14 to 0.50, P < 0.0001).The study concluded that The positive effects observed with external application of Aloevera in preventing or treating infusion phlebitis compared with no intervention or external application of 33% or 50% $MgSO_4$ should therefore be viewed with caution.

Kang Kaew (2007) conducted a systematic review to determine the efficacy of topical aloevera for the treatment of thrombophlebitis in a Thailand hospital among 371 patients. The aloevera gel was applied for a period of 5days .Based on an analysis using duration of healing as an outcome, the healing time in aloevera group was faster than the control group (P=0.006). Hence the researcher concluded that aloevera gel was effective intervention used in thrombophlebitis.

Hu Huali et al (2006) conducted a study to assess the effectiveness of fresh aloevera to prevent phlebitis in malignant patients receiving chemotherapy in the department of tumor Jinghua Guagfu hospital, China.1510 cases were standardized in experimental and control group, experimental 1000 patients, control group 510 patients, fresh aloevera was placed 2 cm above the infusion site and fixed with plaster, every 2 hours it is replaced. The incidence of phlebitis was 3.50% in experimental group and in control group 28.53 %(p0.01) significantly higher than that of experimental group. The study concluded that Applying fresh aloevera was effective in prevention of phlebitis

Quatrin (2003) conducted a double blind evaluation of an alovera gel topical effect to reduce pain and edema on inflammatory conditions like thrombophlebitis, who were on intravenous infusions. In this study 56 patients were selected who receives intravenous infusion. Assessment was done with the visual infusion phlebitis score. Aloevera gel was applied to the experimental group, for a period of 3 days then the post test score was taken. The study was concluded that statistical analysis showed that pain, edema and severity of inflammation was (P=0.01) for the experimental group it was statistically significant.

Chowchen (1995) conducted a comparative study on effect of aloevera to reduce pain and edema due to thrombophlebitis. Twenty seven patients with thrombophlebitis were selected in experimental group; they were treated with aloevera gel compared with twenty seven with Vaseline gauze. It results showed that in experimental group statistical analysis by using't' test and the value of p 0.001 was statistically significant. This study was concluded that shows the effectiveness of aloevera gel on inflammatory conditions were greater than the control group who received Vaseline gauze.

2.3 Literature review related to application of glycerine magnesium sulphate among children with phlebitis

Ravindra HN, Patel Krupa (2015) in this study quasi-experimental research approach by non probability (purposive) sampling technique was used among 60 hospitalised patients and who met the inclusion criteria. In this study the instruments used are baseline Performa, structured interview schedule to assess the subjective symptoms and observation scale to observe the objective symptoms. Is results showed that in experimental group post test mean score 1.10, SD was 0.71 respectively. In control group post test mean score 2.53, SD was 0.78 respectively. The obtained value 7.454 statistically was significant at 0.001 levels. So research hypothesis was accepted. The study was concluded that So there was significant difference between post intervention phlebitis among the experimental group and control group. In the research study findings revealed that Glycerine Magnesium sulphate dressing is highly effective in decrease phlebitis level to the patients

Saini B, Paul p (2011) A quasi experimental study was conducted on "the effectiveness of cold application, heparinoid and magnesium sulphate application on thrombophlebitis" among patients in selected hospitals of Indore. The findings of the study indicated that the computed 't' value of cold application group [t14=14.33], heparinoid application group [t14=20.82] and magnesium sulphate application group [t14=20.82] were statistically significant, which suggested that all three interventions were effective in reducing the signs and symptoms of thrombophlebitis. The computed 'F' ratio of all the three groups [F2.42=10.10] showed that three types of application differ significantly. However, the mean difference of magnesium sulphate group [18.34] was higher than the cold application [13.33] and heparinoid application [12.8] group. This concluded that magnesium sulphate application was most effective intervention in reducing the thrombophlebitis.

MS.Sharmile (2005) investigated the effectiveness of magnesium sulphate application versus cold application was reducing swelling and pain in railway hospital perambur out of 60 cases with thrombophlebitis, they were randomly divided of 6 hours. After the completion of 6 hours post assessment were done. The pre assessment mean was 3.8 and the post assessment mean was 0.5. The study concluded that she has found that the magnesium sulphate dressing had significant difference in reducing the swelling and pain perception at infusion site than cold compress.

Fatkal (2004) A quasi experimental study was conducted to assess the effectiveness of cold application, heparinoid application and magnesium-sulphate application on superficial thrombophlebitis among patients in selected hospitals of Indore. Three-group pre-test and post test design was adopted for the study. 45 patients were selected using purposive sampling and they were randomly assigned into three groups. The finding of the study indicated that the computed ‟t‟ value of cold application group ('t'14=14.33), heparinoid application group ('t14' =11.90) and magnesium sulphate application group ('t'14=20.82) were statistically significant, which suggested that all three interventions were effective in reducing the signs and symptoms of superficial thrombophlebitis. The computed 'F' ratio of all the three groups ('F'2.42=10.10) showed that three types of application differ significantly. However, the mean difference of magnesium sulphate group (18.34) was higher than the cold application (13.33) and heparinoid application (12.8) group. This study concluded that magnesium sulphate application is most effective intervention in reducing the superficial thrombophlebitis.

HuoG, Ying-JiaL, HuiJuan etal (2003) the study was conducted at Regional Advance- Pediatric Care Centre (RAPCC), Mangalore quasi-experimental approach with pre-test design was used for the study. The study sample consists 60 children with phlebitis, where 30 children were placed in group I, treated with magnesium

sulphate crystal fermentation and 30 children were placed in group II, treated with glycerine magnesium sulphate paste application. Purposive sampling technique was used to select the children efficacy of glycerine Magnesium sulphate emulsion on the treatment of phlebitis. The treatment with glycerine magnesium sulphate emulsion was found to take less time 2.16 & 0.39 days compared to control group. The study was concluded that glycerine magnesium 7 sulphate pastes were effective in reducing phlebitis.

Macklin D (2003) a quasi experimental study was conducted on "the effectiveness of four modalities of nursing interventions on phlebitis icthamol belladonna, icthamol belladonna with hot fomentation, glycerine magnesium sulphate, and glycerine magnesium sulphate with hot fomentation". There was a significant difference seen among the four modalities of treatment for the reduction of pain, erythema, swelling, indurations in the phlebitis site $p<0.01$. Mean pre score of all dependant variables among patients in all groups were almost same, but in post treatment the maximum reduction was found among patients in Group III. The study concluded that who had treated with glycerine magnesium sulphate is effective.

Hui Juan (2002) a study was done on efficacy observation of glycerine magnesium sulphate emulsion on peripheral phlebitis in China. The aim of the study was to observe the clinical effects of glycerine magnesium sulphate emulsion and 50% magnesium sulphate solution on the treatment of phlebitis, 57 children with peripheral phlebitis caused by intravenous indwelling needle were randomly divided into observing group (n =29) and control group (n =28). The patients in the control group were treated by 50% magnesium sulphate solution, while those in the observing group were treated by glycerine magnesium sulphate emulsion, and treatment time in both groups was studied. The treatment time in the observing group and control group was (2.16&0.39) days and (5.17&1.15) days respectively (P

<0.01). The study concluded that glycerine magnesium sulphate emulsion can effectively reduce the treatment time of peripheral phlebitis, and it is a safe, simple and effective method with many advantages.

2.4 Conceptual framework

Conceptual Framework The conceptual framework for research study presents the measure on which the purpose of the proposed study is based. The framework provides the perspective from which the investigator views the problem.

Conceptual framework refers to interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme (Polit and Hunger- 1997). A conceptual framework on a model is made up of concepts, which are the mental images of the phenomenon. It offers framework of preposition for conducting research. These concepts are linked together to express the relationship between them. A model is used to denote symbolic representation of the concepts.

The conceptual framework of the study was derived from the modified Lydia hall nursing theory (1964). According to the theory, the nursing is involved in three components. Core, care and cure model .In this study the nurse investigator attaining the goal through 3- steps core, care and cure theory.

STEP-I THE CORE CIRCLE

General Information

For collecting general information the investigator collect information, from the care givers and children by semi structured interview (Demographic data and clinical variable) through pre-test collect information about level of phlebitis of none, mild, moderate and severe.

The Central Purpose

According to the theory, the central purpose refers to what the nurse wants to accomplish. It is the overall plan towards nurse strives. It transcends the immediate intend of the assignment or task by specially directing activities towards the patient's goal. In this study the central purpose was the reduction of the phlebitis.

Step-II The care circle

The nurse formulates a plan for meeting the patients need for help based on available resources. What the patients thinks, knows, can do and has done plus what the nurse thinks, knows, can do and has done the nurse presents the plan to the patients and the patient's response to it.

In this study the application of fresh Aloevera for group I and glycerine magnesium sulphate group II for 3times a day for 2 days.

The framework consists of the human, environment, professional and organizational facilities. In this study phlebitis among children with phlebitis at Government Rajaji Hospital, Madurai.

Step-III The cure circle

It refers to a collection of evidence that shows patients need have been meet and that his/her functional ability has been restored as a direct result of the research action. It is based on patient's oriented evidence. This step involves post-test assessment and that score after ministering analysis to infer the outcome.

In this study the post test was done through Modified Visual infusion phlebitis scale. According to the result of the post test score describe the phlebitis symptoms is considerably reduced in group I. In group II phlebitis symptoms is reduced completely and effectively.

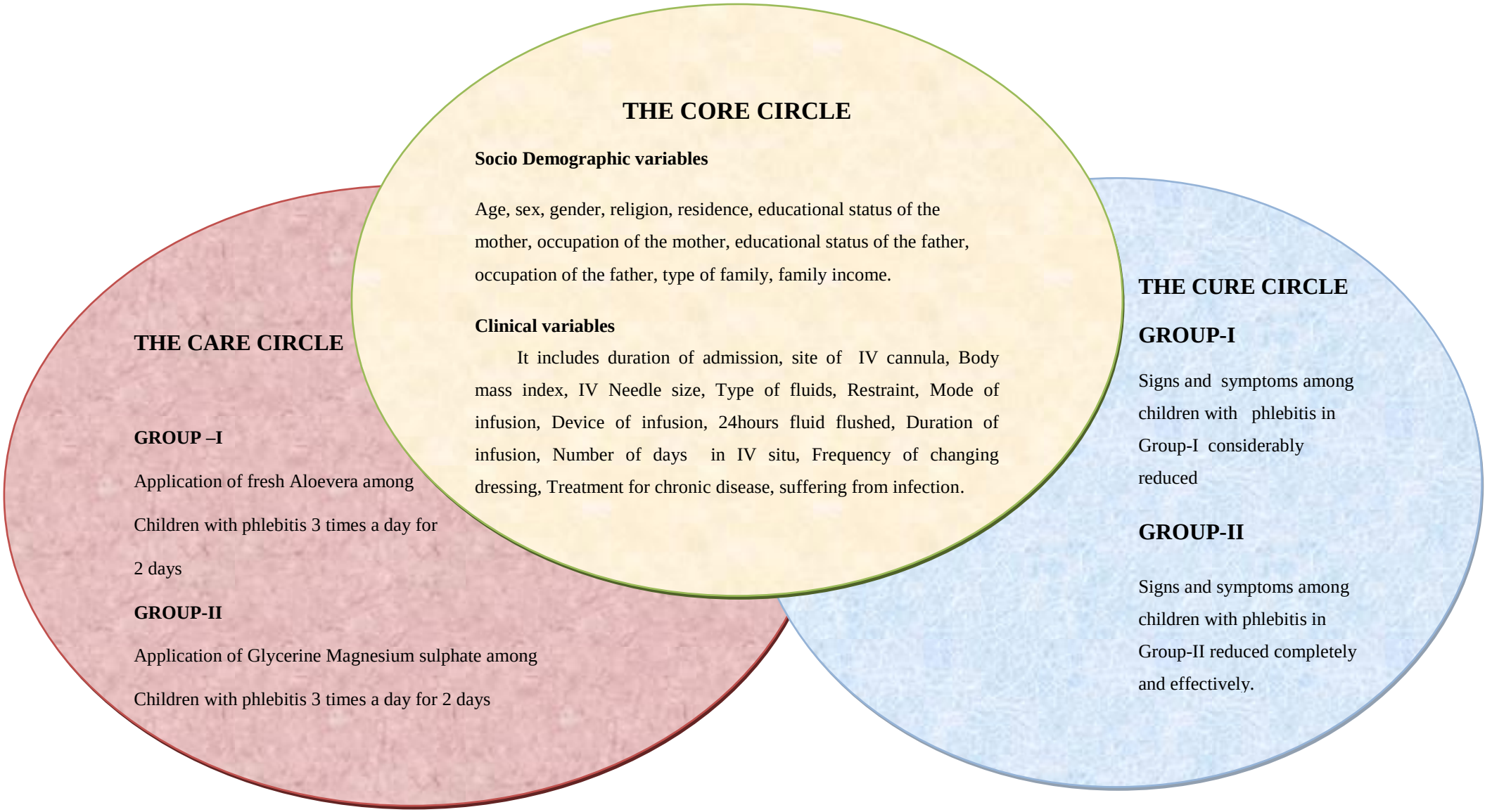


Figure: 1 Conceptual Frame Work Based On Modified Lydia Hall's Core, Care, Cure Model (1964)

RESEARCH METHODOLOGY

CHAPTER - III

RESEARCH METHODOLOGY

The methodology of research indicates the general pattern of organizing the procedure for assembling valid and reliable data for investigation. This chapter provides a brief explanation of the method adopted by the investigator in this study. It includes the research approach, research design, and variables, setting of the study, population, and sample size, sampling technique, description of the tool, pilot study, data collection procedure and plan for data analysis. The present study aimed to evaluate the effectiveness of topical application of fresh aloevera versus Glycerine Magnesium Sulphate on Children with Phlebitis at Government Rajaji Hospital, Madurai.

3.1 Research Approach

The research approach is the most essential part of any research. The entire study is based on it. A research approach tells the researcher about the collection of data that is what to collect, when to collect, how to collect and how to analyze. It also helps the researcher with suggestions of possible conclusions to be drawn from the data.

A quantitative approach was adopted in the present study as the investigation is aimed at evaluating the effectiveness of phlebitis among children.

3.2 Research Design

The research design is the plan, structure and strategy of investigations of answering the research question. It is the overall plan or blueprint the researcher select to carry out the study.

The research design selected for this study was true experimental Pre test - Post test design.

	GROUP	PRETEST	INTERVENTION	POSTTEST
R	Experimental group-I	O_1	X	O_2
	Experimental group-II	O_1	X	O_2

Key

Interventional group-I - Application of fresh Aloevera

Interventional group –II - Application of glycerine magnesium sulphate

O_1 - Observation before intervention

X -Intervention

O_2 - Observation after intervention

3.3 Variable

Independent variable

The independent variable that stands alive and is not dependant on another. It is the cause for an action. In this study independent variable is the fresh aloevera and glycerine magnesium sulphate.

Dependent variable

Dependent variable is the effect of the action of the independent variable and cannot exist by itself. In this study, the dependent variable is phlebitis among children.

Socio demographic variables

It consists of socio demographic data of the clients .The socio demographic variables age in years , gender, religion, residence, educational status of the mother , occupation of the mother , educational status of the father, occupation of the father, type of family, family income.

Clinical variables

It includes duration of admission, site of IV cannula, Body mass index, IV needle size, type of fluids, restraint, mode of infusion, device of infusion, 24hours fluid flushed, duration of infusion, number of days in IV situ, frequency of changing dressing, treatment for chronic disease, suffering from infection.

3.4 Setting of the study

The setting was selected based on acquaintance of the investigator with the institution, feasibility of conducting the study, availability of the sample, permission and proximity of the setting for investigation. The study setting selected, for this study paediatric medical ward at Government Rajaji Hospital, Madurai.

3.5 Population

The population is defined as the entire aggregation of cases that meet a designed criterion.

Target population

The target population of this study was children with phlebitis.

Accessible population

In this study accessible population was children with phlebitis those who were admitted in paediatric ward at Government Rajaji Hospital, Madurai.

3.6 Sample

Children with phlebitis those who met the inclusion criteria, in Paediatric medical ward at Government Rajaji Hospital, Madurai.

3.7 Sample size

In this study the sample size consists of 60 children with phlebitis among 60 samples, 30 samples in interventional group I and 30 samples in interventional group II at Paediatric ward Government Rajaji Hospital, Madurai.

3.8 Sampling Technique

The sampling technique of the study was selected by probability (Simple random) sampling technique.

3.9 Criteria for sampling

Inclusion Criteria

- Patients with peripheral intravenous cannula with phlebitis who were receiving antibiotics.
- Children who were available at the time of study.
- Children in the age group of 1-12 years.
- Parents those who have given consent to participate their children in the study.

Exclusion Criteria

Patients with phlebitis who are

- Having skin disorder, poor skin condition, and abscess in the limbs.
- Hypersensitivity reactions to Aloevera or Glycerine magnesium sulphate.

3.10 Development and description of the tool

Data Collection tools are the procedures or instruments used by the researcher to observe or measure key variables in the research problem. Modified visual Infusion phlebitis scale was selected to assess the level of phlebitis among children. It was considered to be the most appropriate instrument to elicit the response from subjects who able to understand Tamil.

The tool was organized into two sections. They were

Section – A: Deals with Socio demographic Variables

Section A consist of socio demographic variables of age in years, gender, religion, residence, educational status of the mother, occupation of the mother, educational status of the father, occupation of the father, type of family, family income.

Section - B: Clinical variables

Section B consist of duration of admission, site of IV cannula, Body mass index, IV Needle size, Type of fluids, Restraint, Mode of infusion, Device of infusion, 24hours fluid flushed, Duration of infusion, Number of days in IV situ, Frequency of changing dressing, Treatment for chronic disease, suffering from infection.

Section – C: Modified Visual Infusion Phlebitis Scale

Modified Visual Infusion Phlebitis scale the Grade consists of 5 Components. The minimum score 0 and maximum score is 5.

Scoring Procedure Section- A and B:

There was no score given for socio demographic variables and clinical variables.

Section-B:

Modified Visual Infusion Phlebitis scale

Scoring interpretation

Normal level

0) No signs of phlebitis

Mild level (1-2)

1) Possible first signs

One of the following is evident

- Slight pain near IV site or
- Slight redness near IV site

2) Early stage of phlebitis

Two of the following are evident

- Pain at IV site
- Erythema
- Swelling

Moderate level (3-4)

3) Mid-stage of phlebitis

All of the following signs are evident:

- Pain along path of cannula
- Erythema
- Induration

4) Advanced stage of phlebitis

All of the following signs are evident and extensive:

- Pain along path of cannula
- Erythema
- Induration
- Palpable venous cord

Severe level (5)

5) Advanced stage of thrombophlebitis

All of the following signs are evident and extensive:

- Pain along path of cannula
- Erythema
- Induration
- Palpable venous cord
- Pyrexia

Scoring Interpretation

SCORE	INTERPRETATION
0	NORMAL LEVEL
1-2	MILD LEVEL
3-4	MODERATE LEVEL
5	SEVERE LEVEL

3.12 Content Validity

The content validity was obtained from three Child health nursing experts and two professors of Pediatric Medicine department at Institute of Child Health and Research Centre, at Government Rajaji Hospital, Madurai. Minimal modification was made in the section A & Section B of the tool. After the change the tool was finalized. The modified tool was used for data collection and content validity was obtained.

3.13 Reliability

The accuracy and consistency of the research tool are called reliability. Modified visual infusion phlebitis Scale.

Modified visual infusion phlebitis scale-this standardized scale reliability is r=0.83.The Reliability of an instrument is the degree of consistency with which it measures the attribute and it is supposed to be measuring over a period of time. The tool was a standardized one which underwent test retest for reliability. Modified visual infusion phlebitis scale has been administered on two different occasions and the Reliability has been estimated using the karl pearson's correlation coefficient formula, that is r=0.83. Hence the tool is considered as reliable and used in this study.

3.14 Ethical Consideration

This study was conducted after the approval from the Ethical committee, Madurai Medical College, Madurai. All respondents were carefully informed about the purpose of the study and their part during the study and how the privacy was guarded. Ensured confidentiality of the study result. Informed oral and written permission was obtained from all participants.

3.15 Pilot Study

The pilot study was conducted in Paediatric ward at Government Rajaji Hospital, Madurai from 21.05.2018 to 27.05.2018 to test the feasibility of setting, samples, relevance and practicability of the intervention among 10 children with phlebitis. Informed written and oral consent was obtained from the mothers of

children with phlebitis. Subjects were selected by simple random sampling technique. Pre assessment level of phlebitis was done with the help of Modified Visual Infusion Phlebitis scale. In group I receives fresh aloevera and group-II receives glycerine magnesium sulphate care for 8th hourly, three times a day for 2 consecutive days. The post test was conducted at 3rd day by using Modified visual infusion phlebitis scale .Informed oral and written consent was obtained from the mothers of sample and data was collected. The findings evidenced that, there was significant statistical difference in pre-test and post test scores on the level of phlebitis .The pilot study findings revealed that setting was feasible and tool was applicable to conduct the main study. The study was practically feasible to be conducted with a large sample size. The findings of the pilot study revealed that the tool was feasible and practicable.

3.16 Procedure for Data Collection

After obtaining permission from the Principal, College of Nursing, Director, Institute of Child Health and Research centre, Ethical committee on the first day of data collection, the investigator introduced himself and explained the nature and purpose of the study to the mothers of children with phlebitis. Subjects were selected based on the inclusion criteria. Consent was obtained from the care givers of the participate and confidentiality of their responses was assured. Subjects for the study were undergone the pre assessment of level of phlebitis by using modified Visual infusion phlebitis scale. Then investigator applied the fresh Aloevera for group I and applied the glycerine magnesium sulphate for group II to children with phlebitis for 3 times (7 am, 3 pm, 11pm) a day for 2 consecutive days and after that the investigator was assessed the level of phlebitis on children by means of post test using modified Visual infusion phlebitis scale on third day morning . Proposed study duration is 4 to 6 weeks.

3.17 Plan for Data Analysis

The data analysis will be involved the translation of information collected during the course of research project into an interpretable and managerial form. It involve the use of statistical procedures to give an organization and meaning to the data. Descriptive and inferential statistics used for data analysis. To compute the data, a master sheet prepared by the investigator. The data analyzed using both descriptive and inferential statistics.

Descriptive statistics Include

1) Frequency and percentage distribution of the socio demographic variables.
2) Mean and standard deviations of pre assessment and post assessment for level of phlebitis.

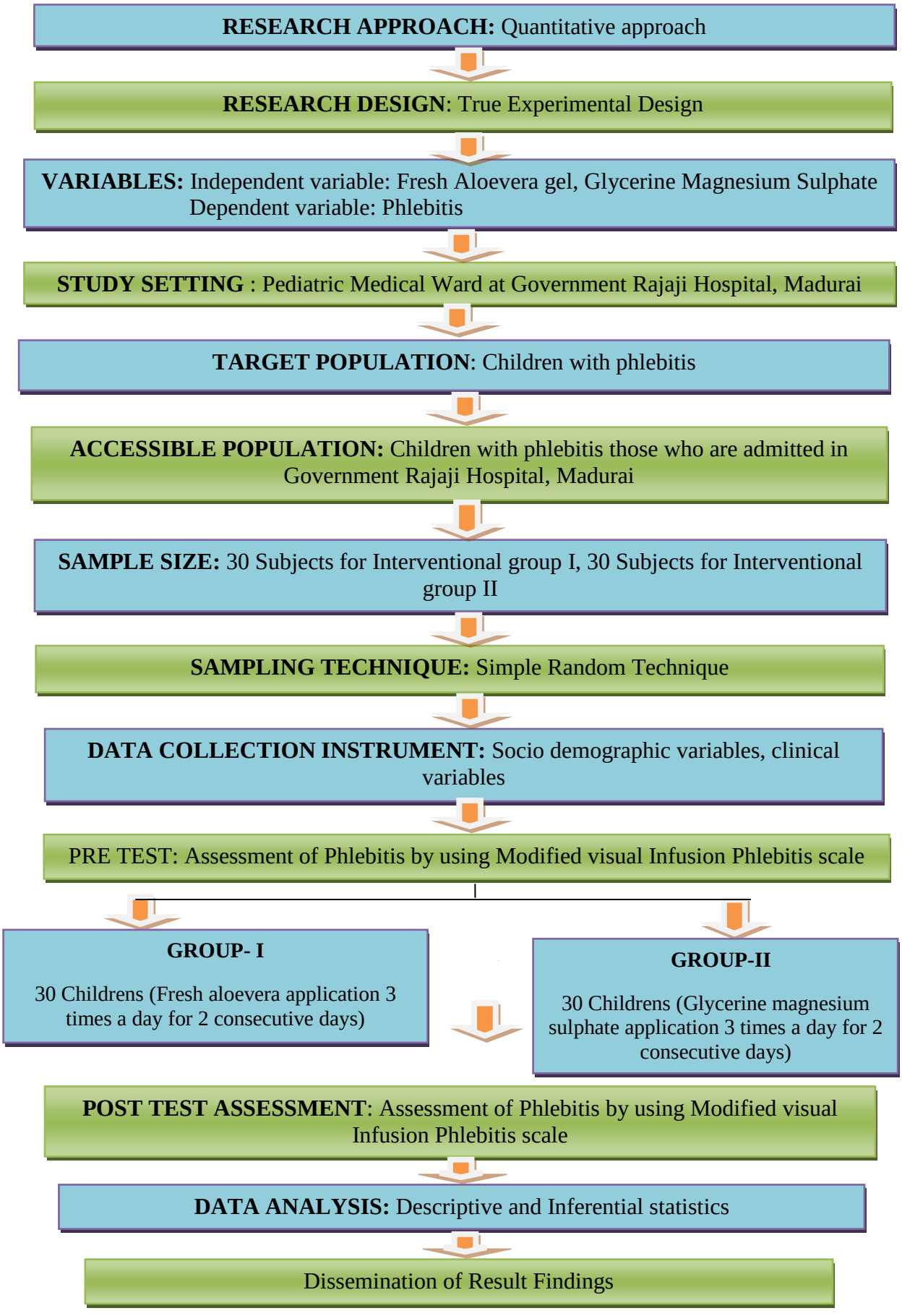
Inferential statistics include

1. Student paired 't' test for comparison for pre assessment and post assessment to assess the effectiveness of level of phlebitis.
2. Chi- square test to analyze the association between the level of phlebitis and socio demographic variables .

3.18 Protection of Human Rights

Research proposal was approved by the dissertation committee of College Of Nursing, Madurai Medical College, Madurai, Head of the Department of Paediatrics, in Institute of Child Health and Research Centre, at Government Rajaji Hospital, Madurai. An oral and written consent of each mothers of children with phlebitis can be obtained before starting the data collection. They were explained that they may withdraw from the study at any time without any penalty. Assurance will be given to the subjects that confidentiality will be maintained throughout the study.

3.19 Schematic representation of research methodology



DATA ANALYSIS AND INTERPRETATION

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the description of sample, analysis and interpretation of the data collected to evaluate the achievement of the objectives of the study. Statistical procedure enabled the investigator to deduce, summarize, organize, evaluate, interpret and communicate the numeric information. Statistical analysis is a method of rendering quantitative information meaningful and intelligible. In this chapter the data collected were edited, tabulated, analyzed and interpreted. The findings were organized and presented in the following orderly sections.

4.1 Organization of Data

The analysis and interpretation of data was organized under the following sections.

Section –I: Distribution of socio demographic and clinical variables among children with phlebitis both in interventional group I and interventional group II.

Section –II: Distribution of pre test level of phlebitis among children interventional group I and interventional group II.

Section –III: Effectiveness on Fresh aloevera and Glycerine magnesium sulphate on children with phlebitis.

Section-IV: Comparison of post test level of children with phlebitis among interventional group I and interventional group II.

Section –V: Association between the post test level of phlebitis among children in interventional group I and group II with their selected socio demographic and clinical variables.

Section- I

Distribution of socio demographic and clinical variables among children with phlebitis both in Interventional group-I and Interventional group-II

Table - 1

Frequency and percentage distribution of socio demographic and clinical variables among children with phlebitis

n=60

Socio demographic variables		Intervention			
		Group I		Group II	
		f	%	f	%
Age	1- 3 years	2	6.7%	2	6.7%
	4- 6 years	13	43.3%	11	36.6%
	7- 9 years	8	26.7%	9	30.0%
	10-12 years	7	23.3%	8	26.7%
Gender	Male	18	60.0%	20	66.7%
	Female	12	40.0%	10	33.3%
Religion	Hindu	20	66.7%	16	53.3%
	Christian	7	23.3%	10	33.4%
	Muslim	3	10.0%	4	13.3%
Place of Residence	Urban	17	56.7%	16	53.3%
	Rural	13	43.3%	14	46.7%
Mother educational status	Non formal	7	23.3%	10	33.3%
	Primary education	17	56.7%	12	40.0%
	Secondary education	6	20.0%	8	26.7%
	Graduate	0	0	0	0
Occupation of mother	Sedentary workers	3	10.0%	4	13.3%
	Moderate worker	6	20.0%	5	16.7%
	Heavy worker	2	6.7%	3	10.0%
	Housewife	19	63.3%	18	60.0%
Father Educational Status	Non formal	5	16.7%	5	16.7%
	Primary education	14	46.6%	17	56.6%
	Secondary education	9	30.0%	8	26.7%
	Graduate	2	6.7%	0	0.0%

Occupation of father	Sedentary worker	6	20.0%	6	20.0%
	Moderate worker	18	60.0%	16	53.3%
	Heavy worker	6	20.0%	8	26.7%
Type of family	Joint family	11	36.7%	10	33.3%
	Nuclear family	19	63.3%	20	66.7%
Income of the family per month	Rs.2000 below	0	0.0%	0	0.0%
	Rs.2001-Rs.4000	9	30.0%	6	20.0%
	Rs4001-Rs.6000	11	36.7%	12	40.0%
	Above 6000	10	33.3%	12	40.0%
Duration of admission	< 2 days	12	40.00%	11	36.67%
	2-4 days	13	43.33%	10	33.33%
	4-6 days	5	16.67%	9	30.00%
Site of IV cannula	Radial vein	14	46.67%	14	46.67%
	Median vein	11	36.67%	13	43.33%
	Median cubital vein	5	16.67%	3	10.00%
BMI	Normal	21	70.00%	24	80.00%
	Low	7	23.33%	4	13.33%
	High	2	6.67%	2	6.67%
IV needle size	24 Gauge	16	53.33%	18	60.00%
	22 Gauge	12	40.00%	12	40.00%
	18Gauge	2	6.67%	0	0.00%
Type of fluid	Crystalloids	26	86.67%	23	76.67%
	Colloids	4	13.33%	7	23.33%
Type of drug	Antibiotics	10	33.33%	20	66.67%
	Multivitamins	11	36.67%	6	20.00%
	Mixed	9	30.00%	4	13.33%
Restraint	Yes	10	33.33%	13	43.33%
	No	20	66.67%	17	56.67%
Mode of infusion	Bolus	12	40.00%	14	46.67%
	Short time	10	33.33%	12	40.00%
	Long duration	8	26.67%	4	13.33%

Device of infusion	Infusion drip	6	20.00%	11	36.67%
	Microdrip set	18	60.00%	15	50.00%
	Syringe infusion	6	20.00%	4	13.33%
24hrs fluid flushed	<100ml	6	20.00%	10	33.33%
	100-200ml	14	46.67%	10	33.33%
	>500ml	10	33.33%	10	33.33%
Duration of infusion	<2hrs/day	5	16.67%	7	23.33%
	2-4hrs/day	10	33.33%	13	43.33%
	5-6hrs/day	11	36.67%	8	26.67%
	>6hrs/day	4	13.33%	2	6.67%
Number of days in IV situ	< 3 days	12	40.00%	9	30.00%
	3-5 days	13	43.33%	13	43.33%
Frequency of changing dressing	5-7 days	5	16.67%	8	26.67%
	Daily	7	23.33%	5	16.67%
	3days once	19	63.34%	23	76.66%
	6days once	4	13.33%	2	6.67%
Treatment for chronic disease	Yes	4	13.33%	3	10.00%
	No	26	86.67%	27	90.00%
Suffering from infection	Yes	7	23.33%	5	16.67%
	No	23	76.67%	25	83.33%

Table 1 explains the distribution of children with phlebitis according to their selected socio demographic and clinical variables both in interventional group-I and interventional group-II.

According to the age, in interventional group I, majority of the subjects 13 (43.3 %) belongs to the age group between 4 - 6 years, 8 (26.7 %) belongs to the age group between 7-9 years, 7 (23.3 %) belongs to the age group between 10-12 years and remaining 2 (6.7 %) belongs to the age group between 1-3 years. In interventional group II majority of the subjects 11 (36.6 %) belongs to the age group between 4 - 6 years, 9 (30.0 %) belongs to the age group between 7-9 years, 8 (26.7 %) belongs to

the age group between 10-12 years and remaining 2 (6.7 %) belongs to the age group between 1-3 years.

With regard to the gender, in interventional group I, majority of the subjects 18 (60.0%) were male children, remaining 12 (40.0%) were female children. In interventional group II majority of the subjects 20 (66.7%) were male children, remaining 10 (33.3 %) were female children.

Based on the religion, in interventional group I, majority of the subjects 2 (66.7 %) were Hindu, 7 (23.3 %) were Christian 3 (10.0 %) were Muslim, and none of them were other type of religion. In interventional group II majority of the subjects 16 (53.3%) were Hindu, 10 (33.4%) were Christian 4 (13.3%) were Muslim and none of them were other type of religion.

As far as place of residence, in interventional group I, majority of the subjects 17 (56.7%) hailed from rural area and remaining 13 (43.3%) hailed from urban. In interventional group II majority of the subjects 16 (53.3 %) hailed from rural area, 14 (46.7 %) hailed from urban area.

When discussing educational status of the mother, in interventional group I, majority of the subjects 17 (56.7 %) studied upto primary education, 7 (23.3 %) had non formal education, remaining 6 (20.0%) studied upto secondary education, none of them graduates. In interventional group –II majority of the subjects, 12 (40.0%) had non formal education 10 (33.3%) studied upto Primary education, remaining 8 (26.7%) studied upto secondary education and none of them had graduates.

Regarding the occupations of Mothers, in interventional group I, majority of the subjects 19 (63.3 %) were house wife 6 (20.0 %) were moderate worker, 3 (10.0 %) were sedentary worker, and remaining 2 (6.7 %) were heavy worker .In interventional group II majority of the subjects 18 (60.0%) were house wife, 4 (13.3%) were sedentary worker 5 (16.7 %) were moderate worker, and remaining 3 (10.0%) were heavy worker.

When discussing educational status of the father in interventional group I, majority of the subjects 14 (46.6 %) studied upto primary school education, 9 (30.0%) studied upto secondary education, remaining 5 (16.7 %) had non formal education and 2 (6.7%) studied up to graduates education. In interventional group II majority of the subjects 17 (56.6%) studied upto primary school education, 8 (26.7 %) studied upto secondary education, 5 (16.7 %) had non formal education, and none of them graduates.

Regarding the occupation of fathers in interventional group I, majority of the subjects 18 (60.0 %) were moderate worker 6 (20.0%) were sedentary worker, and remaining 6 (20.0 %) were heavy worker .In interventional group II majority of the subjects 16 (53.3 %) were moderate worker 8 (26.7 %) were heavy worker and remaining 6 (20.0%) were sedentary worker

With respect of the type of family in interventional group I, majority of the subjects 19 (63.7%) belongs to nuclear family, 11 (36.7%) belongs to joint family .In interventional group II majority of the subjects 20 (66.7%) belongs to nuclear family,10 (33.3%) belongs to joint family

While comparing the family income per month in interventional group I, majority of the subjects 11 (36.7 %) were earned between Rs 4001 – 6000, 10 (33.3%) were earned more than Rs 6000, 9 (30.0 %) were earned between Rs 2001-4000 and none of them earned below Rs.2000. In interventional group II majority of the subjects 12 (40.0 %) were earned more than above Rs 6000, 12 (40.0 %) were earned between Rs 4001 – 6000, 6 (20.0 %) were earned between Rs 2001-4000, and none of them earned below Rs.2000.

With stating the duration of admission in interventional group I, majority of the subjects 13 (43.33 %) were hospitalized between 2-4 days, 12 (40.0 %) were less than 2 days and 5 (16.67 %) were hospitalized between 4-6 days. In interventional group II majority of the subjects 11 (36.67 %) were Less than 2 days, 10 (33.33 %) were hospitalized between 2-4 days and 9 (30.0 %) were hospitalized between 4-6 days.

While considering the site of IV cannula in interventional group I, majority of the subjects 14 (46.67 %) were radial vein ,11 (36.67%) were medial vein, 5 (16.67 %) were medial cubital vein. In interventional group II 14 (46.67%) were radial vein, 13 (43.33%) of them were medial vein, 3 (10.00 %) were medial cubital vein.

According to BMI in interventional group I, majority of the subjects 21 (70.00 %) had normal BMI, 7 (23.33 %) had low BMI, 2 (6.67%) had high BMI. In interventional group II majority of the subjects 24 (80.00 %) had normal BMI 4 (13.33 %) had low BMI, and 2 (6.67 %) had high BMI.

On the basis of Intravenous catheter needle size in interventional group I, majority of the subjects 16 (53.33 %) had 24 gauge, 12 (40.00 %) had 22 gauge, and 2 (6.67%) had 18 gauge. In interventional group II majority of the subjects 18 (60.00 %) had 24 gauge, 12 (40.00 %) had 22 gauge, and none of them had 18 gauge.

Based on type of fluids in interventional group I, majority of the subjects 26 (86.67 %) were receiving crystalloids and 4 (13.33 %) were receiving colloids. In interventional group II majority of the subjects 23 (76.67 %) were receiving crystalloids and 7 (23.33 %) were receiving colloids.

On the basis on type of drugs in interventional group I, majority of the subjects 11 (36.67%) were receiving multi vitamins, 10 (33.33 %) were receiving antibiotics, 9 (30.0%) were receiving mixed. In interventional group II majority of the subjects 20 (66.67%) were receiving antibiotics, 4 (13.33 %) were receiving mixed and 6 (20.0 %) were receiving multi vitamins.

When identifying the use of restraints in interventional group I, majority of the subjects 20 (66.67 %) were not had restraint and 10 (33.33 %) were had restraints. In interventional group II majority of the subjects 17 (56.67 %) were not had restraint and 13 (43.3 %) were had restraints.

Based on Mode of Infusion in interventional group I, majority of the subjects 12 (40.00 %) were receiving bolus, 10 (33.33 %) were receiving short duration and 8

(26.67%) were receiving long duration. In interventional group II majority of the subjects 14 (46.67%) were receiving bolus, 12 (40.00 %) were receiving short duration and 4 (13.33 %) were receiving long duration.

According to device of infusion in interventional group I, majority of the subjects 18 (60.00 %) were in Microdrip set, 6 (20.00 %) were in Infusion drip and 6 (20.00 %) were in syringe infusion .In interventional group II majority of the subjects 15 (50.00%) were in Microdrip set, 11 (36.67 %) were in Infusion drip and 4 (13.33 %) were in syringe infusion.

While denoting the total amount of fluid flushed in 24 hours, in interventional group I, majority of the subjects 14 (46.67%) were had 100- 200 ml of fluid, 10 (33.33%) were had more than 500 ml of fluid and 6 (20.00%) were had less than 100 ml of fluid . In interventional group II majority of the subjects 10 (33.33 %) were had less than 100 ml of fluid, 10 (33.33 %) were had 100-200 ml of fluid and 10 (33.33 %) were had more than 500 ml of fluid.

Considering the duration of Infusion in interventional group I, majority of the subjects 11 (36.67%) were received 5-6 hours/day, 10 (33.33 %) were received 2-4 hours /day, 5 (16.67%) of them were received less than 2hours / day, and 4 (13.33%) of them were received more than 6hours / day. In interventional group II majority of the subjects 13 (43.33%) of them were received 2-4 hours / day, 8 (26.67%) of them were received 5-6 hours / day, 7 (23.33%) of them were received less than 2hours / day and 2 (6.67 %) of them were received more than 6 hours / day.

With regard to number of days in IV situ in interventional group I, majority of the subjects 13 (43.33%) were had 3- 5 days, 12 (40,00 %) were had less than 3 days, and 5 (16.67 %) were had 5-7 days. In interventional group II majority of the subjects 13 (43.33 %) were had 3- 5 days, 9 (30.00 %) were had less than 3 days and 8 (26.67 %) were had 5-7 days.

While comparing the frequency of changing catheter site dressing in interventional group I, majority of the subjects 19 (63.34 %) were changed once in 3 days, 7 (23.33 %) were changed daily and 4 (13.33%) were changed once in 6 days. In interventional group II majority of the subjects 23 (76.66 %) were changed once in 3 days, 5 (16.67 %) were changed daily, and 2 (6.67 %) were changed once in 6 days.

Regarding treatment for chronic disease in interventional group I, majority of the subjects 26 (86.67%) had not taken treatment for chronic disease, 4 (13.33 %) had taken treatment for chronic disease. In interventional group II majority of the subjects 27 (90.00 %) had not taken treatment for chronic disease and 3 (10.00 %) had taken treatment for chronic disease

Based on Suffering from Infection in interventional group I, majority of the subjects 23 (76.67 %) were not suffering infection, 7 (23.33 %) were suffering infection. In interventional group II majority of the subjects 25 (83.33 %) were not suffering from infection and 5 (16.67 %) were suffering infection

Distribution of subjects according to age

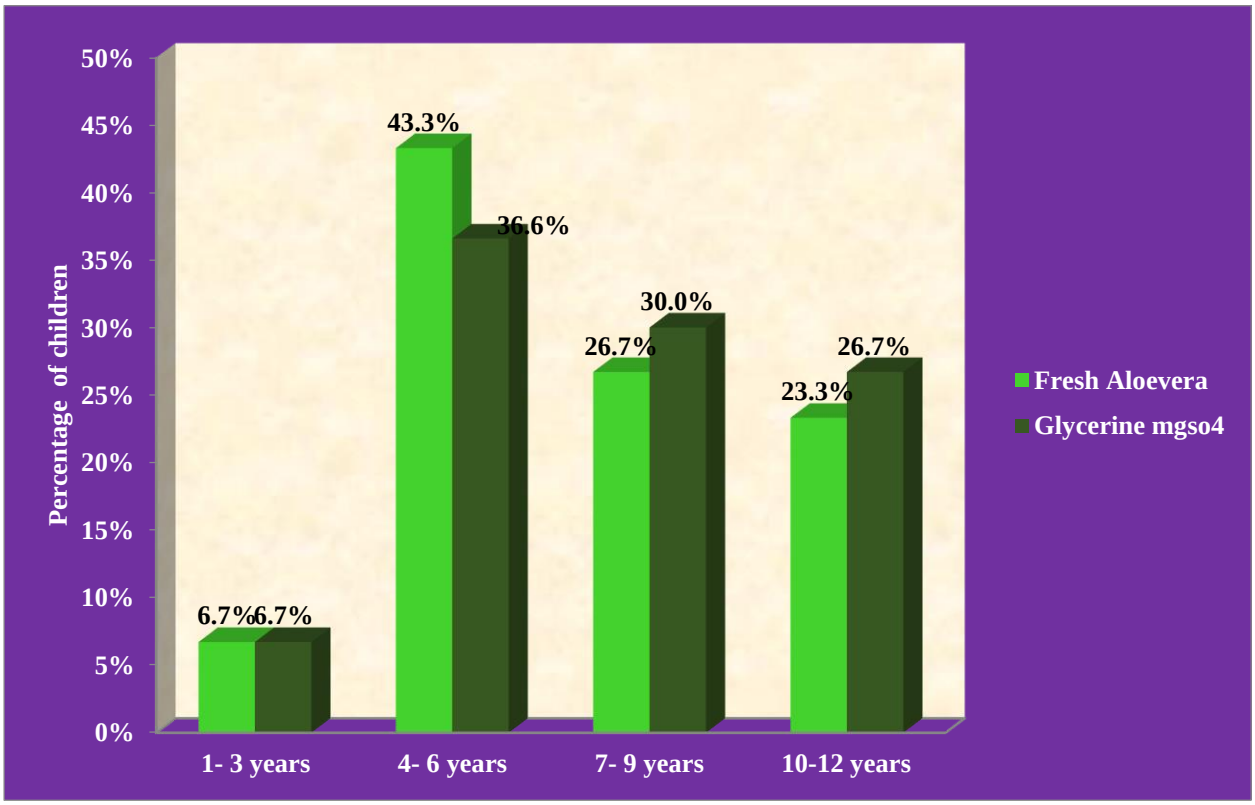


Figure 2: Multiple Bar diagram depicts the percentage distribution of subjects with phlebitis according to their age

The above multiple bar diagram depicts that distribution of children with phlebitis according to their age in interventional group I , majority of the subjects 13 (43.3 %) belongs to the age group between 4 - 6 years , 8 (26.7 %) belongs to the age group between 7-9 years , 7 (23.3 %) belongs to the age group between 10-12 years and remaining 2 (6.7 %) belongs to the age group between 1-3 years .In interventional group II majority of the subjects 11 (36.6 %) belongs to the age group between 4 - 6 years, 9 (30.0 %) belongs to the age group between 7-9 years , 8 (26.7 %) belongs to the age group between 10-12 years and remaining 2 (6.7 %) belongs to the age group between 1-3 years.

Distribution of subjects according to gender

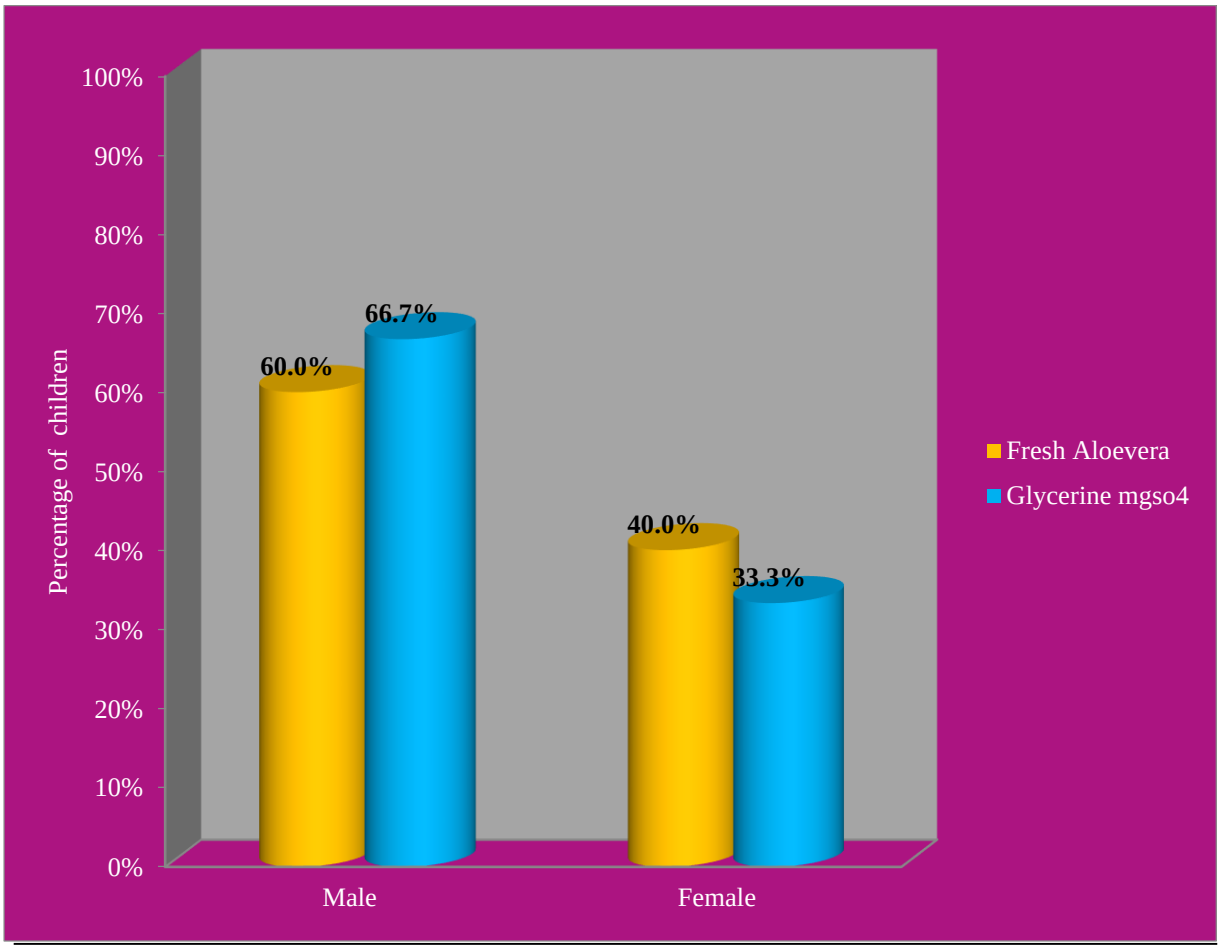


Figure 3: Multiple cylinder diagram portrays the percentage distribution of subjects with phlebitis according to their gender

The above Cylinder diagram portrays that percentage distribution of children with phlebitis according to their gender, With regard to the gender in interventional group I , majority of the subjects 18 (60.0%) were male children, remaining 12 (40.0 %) were female children. In interventional group II majority of the subjects 20 (66.7%) were male children, remaining 10 (33.3 %) were female children

Distribution of subjects according to religion

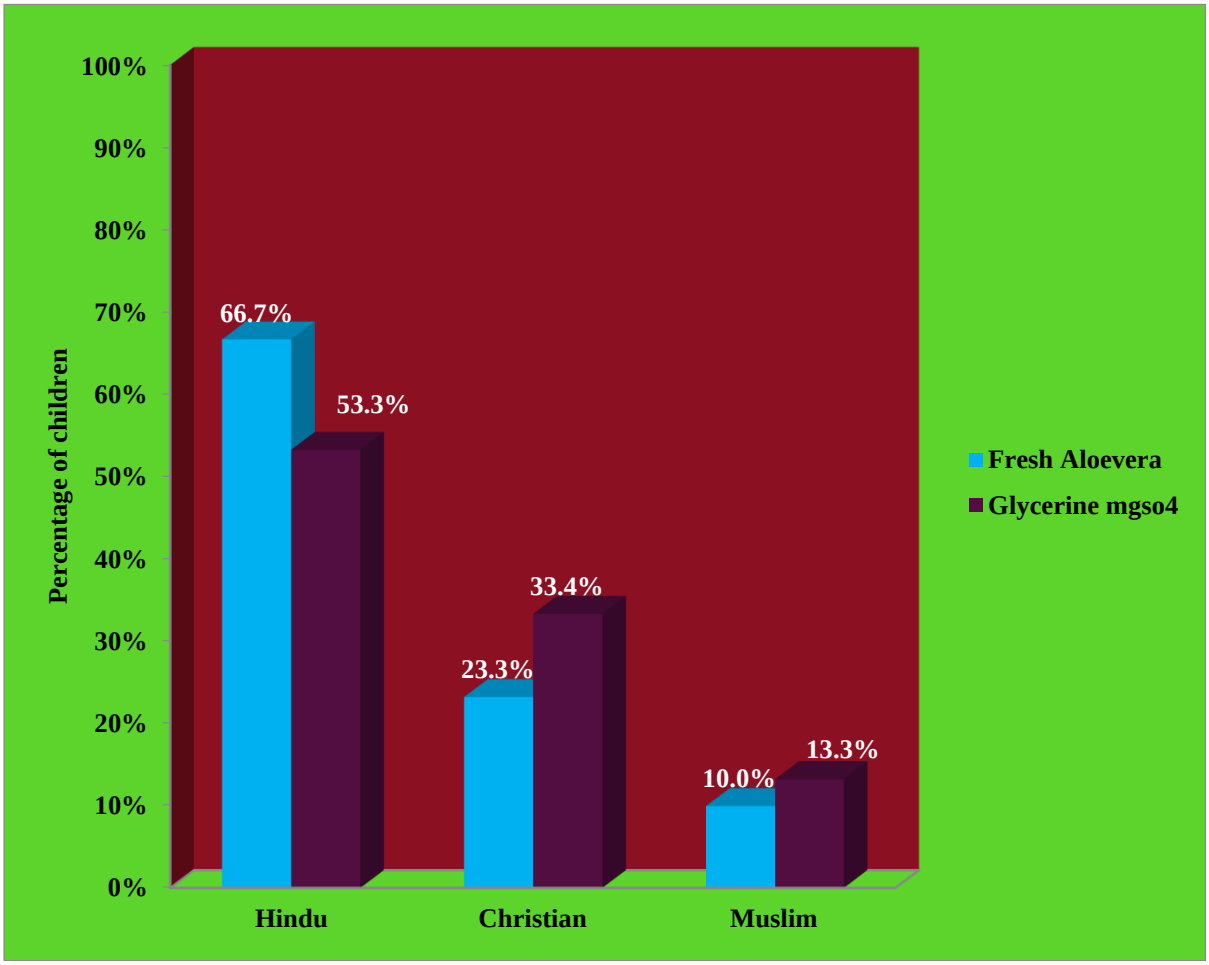


Figure 4 : Multiple Bar diagram quotes the percentage distribution of subjects with phlebitis according to their religion

The above multiple bar diagram shows that percentage distribution of children with phlebitis according to their religion, in interventional group I, majority of the subjects 2 (66.7 %) were Hindu , 7 (23.3 %) were Christian 3 (10.0 %) were Muslim, and none of them were other type of religion. In interventional group II majority of the subjects 16 (53.3%) were Hindu, 10 (33.4%) were Christian 4 (13.3%) were Muslim and none of them were other type of religion.

Distribution of subjects according to place of residence

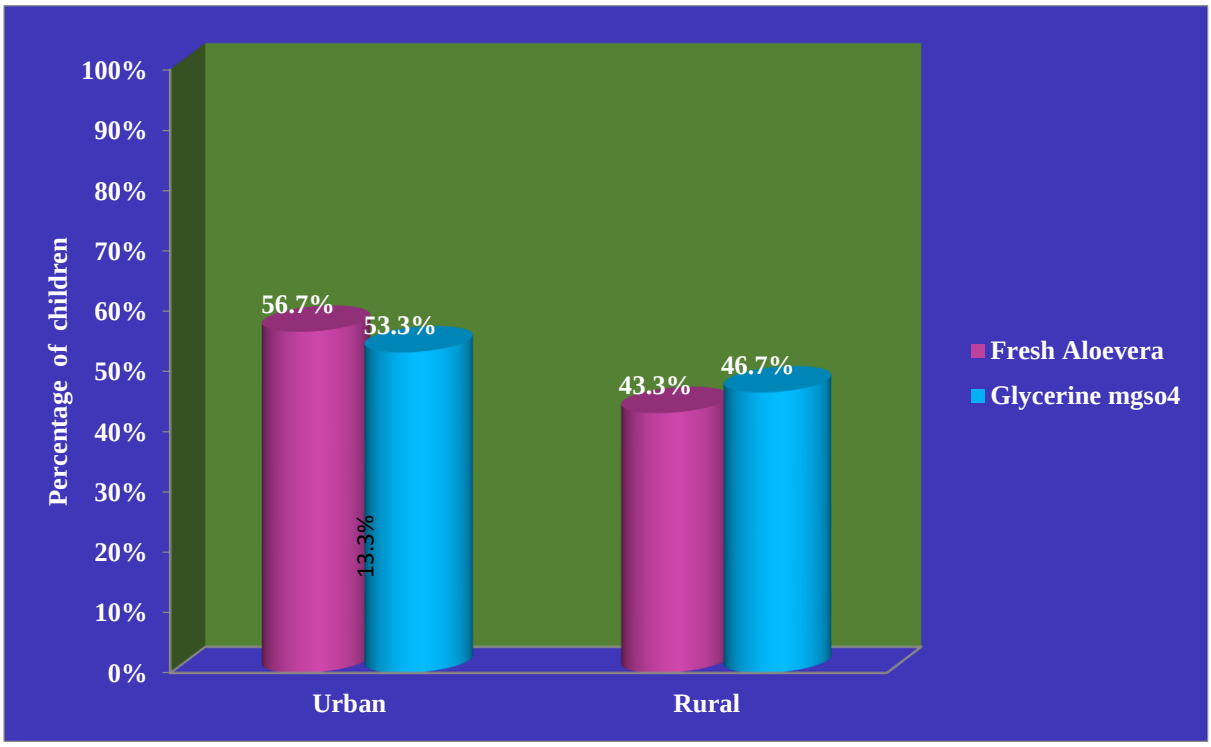


Figure 5 : Multiple cylinder diagram portrays the percentage distribution of subjects with phlebitis according to their place of residence

The above Cylinder diagram portrays as far as residence in children with phlebitis , in interventional group I, majority of the subjects 17 (56.7%) hailed from rural area and remaining, 13 (43.3%) hailed from urban. In interventional group II majority of the subjects 16 (53.3 %) hailed from rural area, 14 (46.7 %) hailed from urban area.

Distribution of subjects according to mother education status

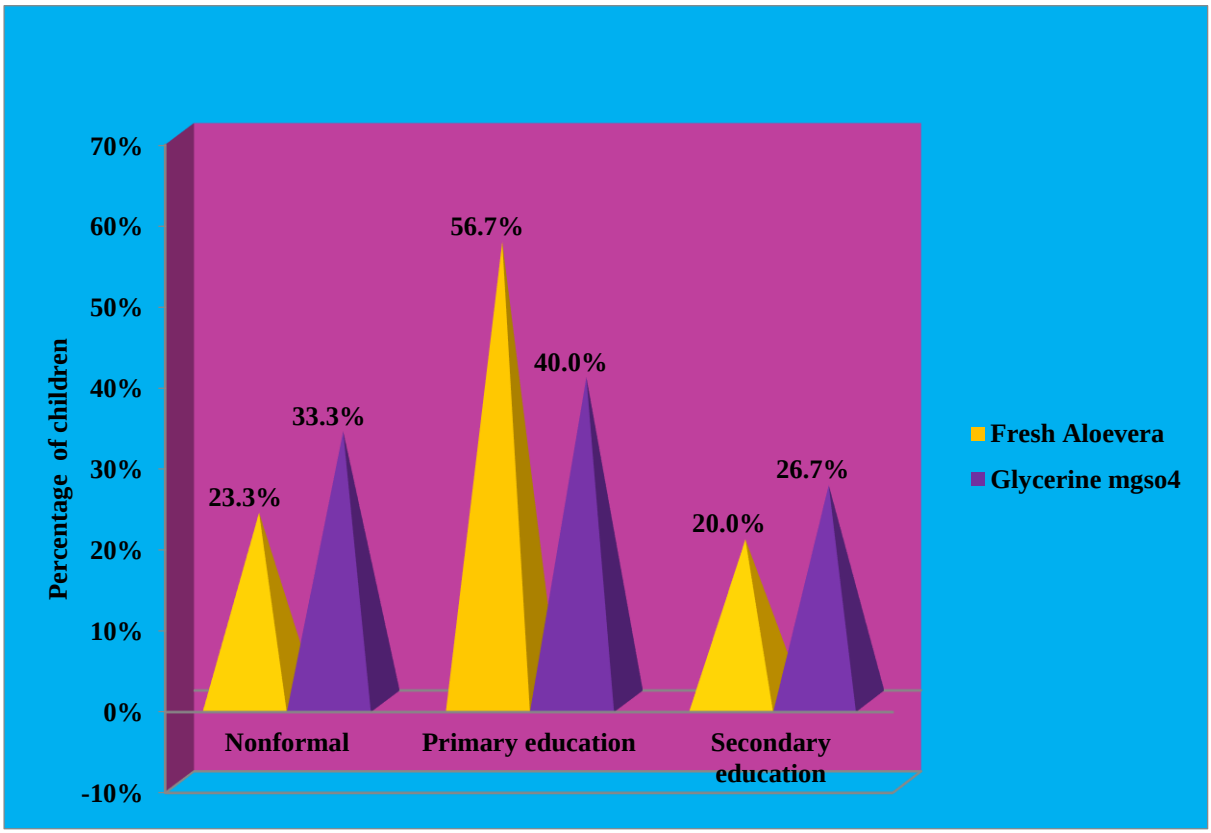


Figure 6 : Multiple cone diagram discussing the percentage distribution of subjects with phlebitis according to their mother's educational status

The above cone diagram discussing educational status of the mother among children with phlebitis, in interventional group I, majority of the subjects 17 (56.7 %) studied upto primary education, 7 (23.3 %) had non formal education, remaining 6 (20.0%) studied upto secondary education, none of them graduates. In interventional group –II majority of the subjects, 12 (40.0%) had non formal education 10 (33.3%) studied upto Primary education, remaining 8 (26.7%) studied upto secondary education and none of them had graduates.

Distribution of subjects according to occupation of mother

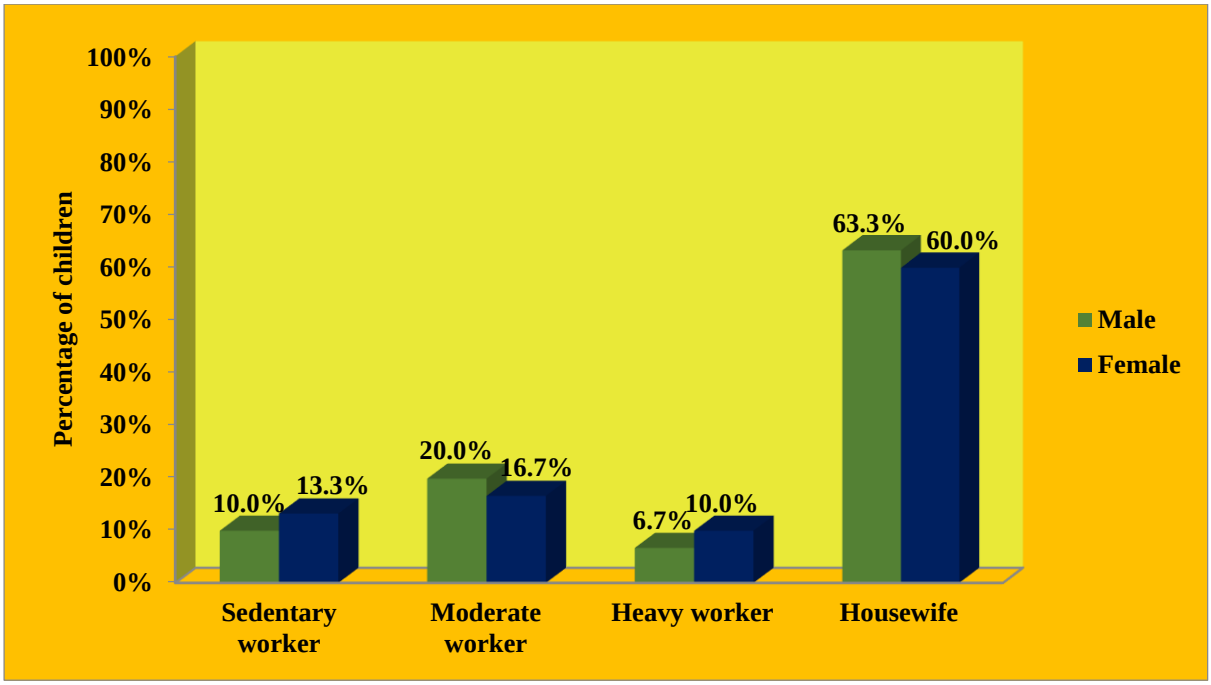


Figure 7: Multiple bar diagram shows the percentage distribution of subjects with phlebitis according to their occupation of mother

The above multiple bar diagram shows occupation of mother among children with phlebitis in interventional group I , majority of the subjects 19 (63.3 %) were house wife 6 (20.0 %) were moderate worker, 3 (10.0 %) were sedentary worker, and remaining 2 (6.7 %) were heavy worker . In interventional group II majority of the subjects 18 (60.0%) were house wife, 4 (13.3%) were sedentary worker 5 (16.7 %) were moderate worker, and remaining 3 (10.0%) were heavy worker.

Distribution of subjects according to education status of father

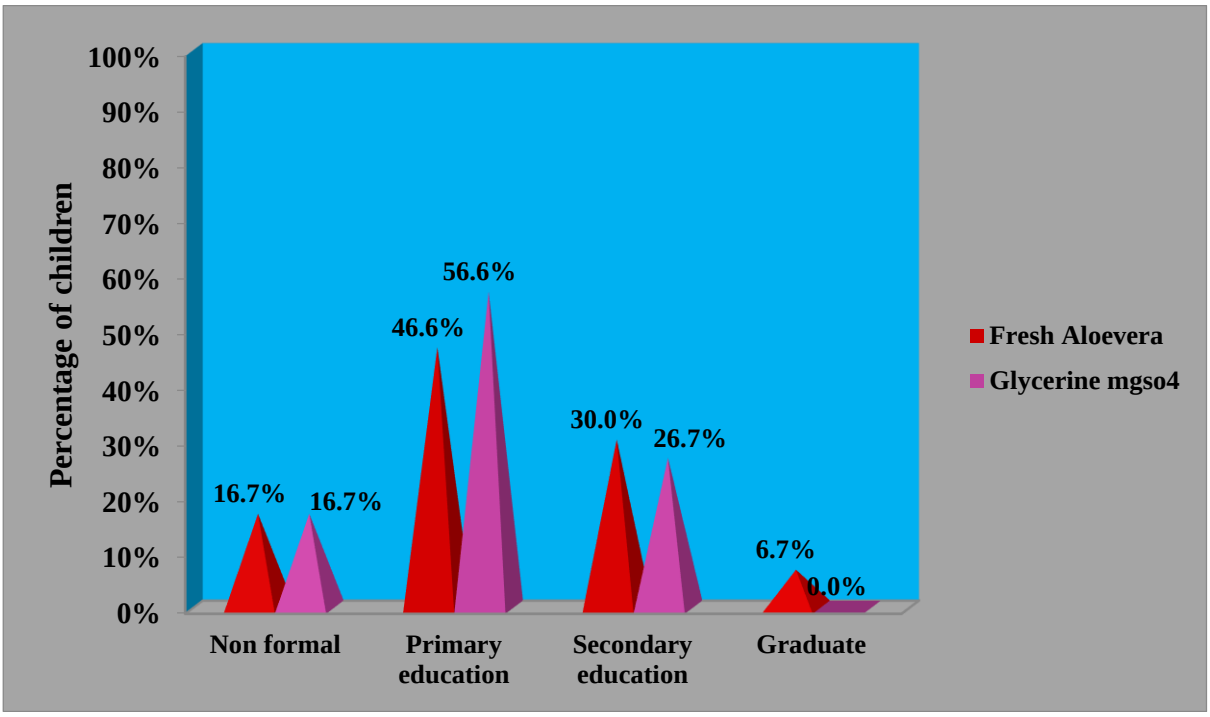


Figure 8: Multiple cone diagram discussing the percentage distribution of subjects with phlebitis according to their father's educational status

The above cone diagram discussing educational status of the father among children with phlebitis in interventional group I , majority of the subjects 14 (46.6 %) studied upto primary school education, 9 (30.0%) studied upto secondary education, remaining 5 (16.7 %) had non formal education and 2 (6.7%) studied up to graduates education . In interventional group II majority of the subjects 17 (56.6%) studied upto primary school education, 8 (26.7 %) studied upto secondary education, 5 (16.7 %) had non formal education, and none of them graduates.

Distribution of subjects according to occupation of father

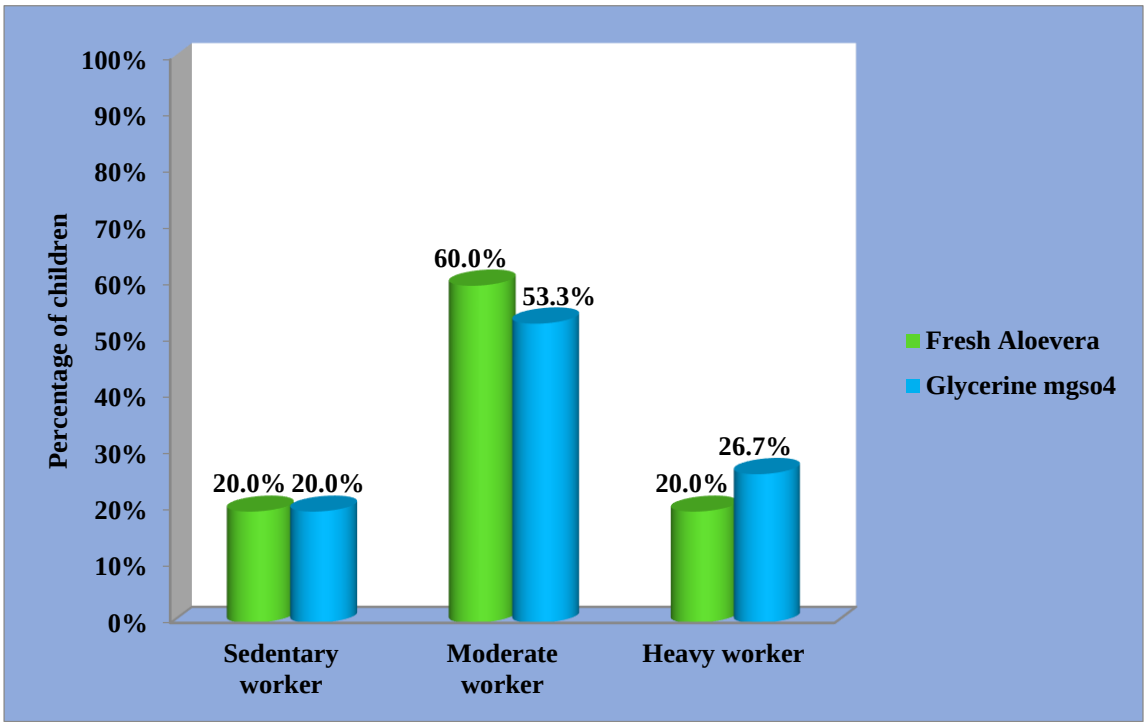


Figure 9: Multiple cylinder diagram shows the percentage distribution of subjects with phlebitis according to their occupation of father

The above multiple cylinder diagram shows occupation of father among children with phlebitis fathers in interventional group I, majority of the subjects 18 (60.0 %) were moderate worker 6 (20.0%) were sedentary worker, and remaining 6 (20.0 %) were heavy worker .In interventional group II majority of the subjects 16 (53.3 %) were moderate worker 8 (26.7 %) were heavy worker and remaining 6 (20.0%) were sedentary worker

Distribution of subjects according to type of family

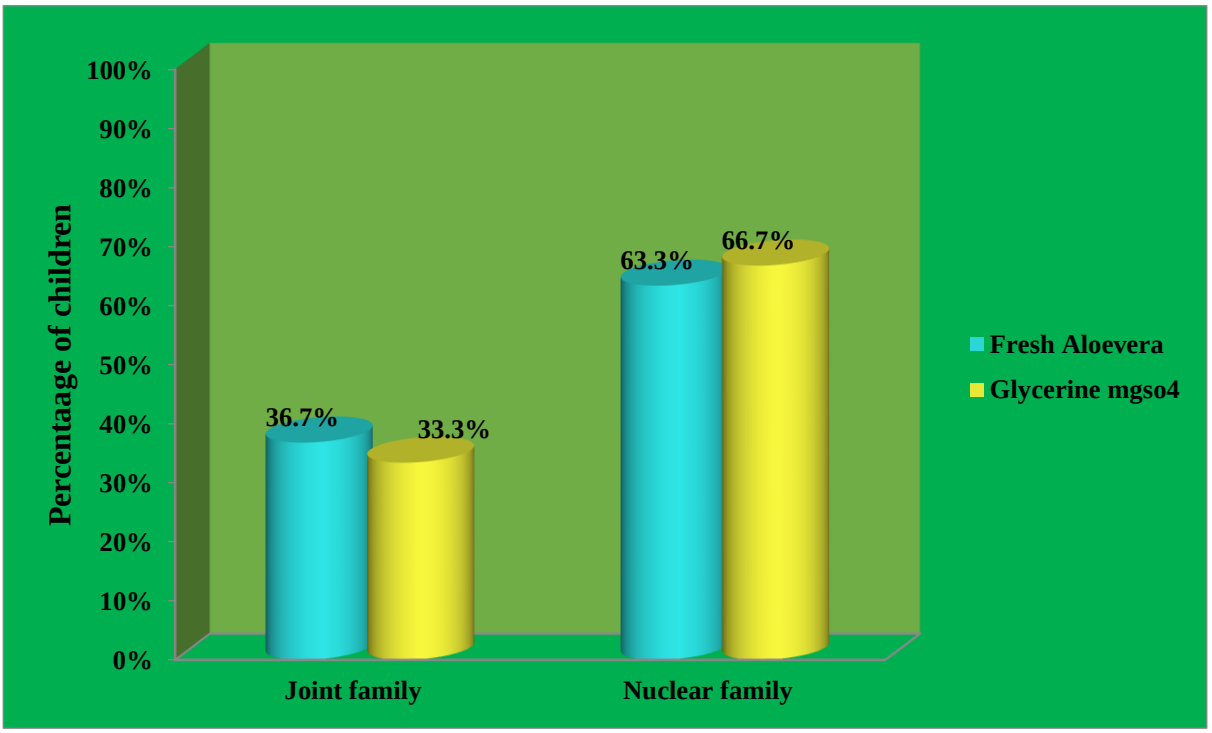


Figure 10: Multiple cylinder diagram depicts the percentage distribution of subjects according to their type of family

The above multiple cylinder diagram depicts with respect of the type of family among children with phlebitis, in interventional group I , majority of the subjects 19 (63.7%) belongs to nuclear family, 11 (36.7%) belongs to joint family .In interventional group II majority of the subjects 20 (66.7%) belongs to nuclear family,10 (33.3%) belongs to joint family.

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Distribution of subjects according to income of the family per month

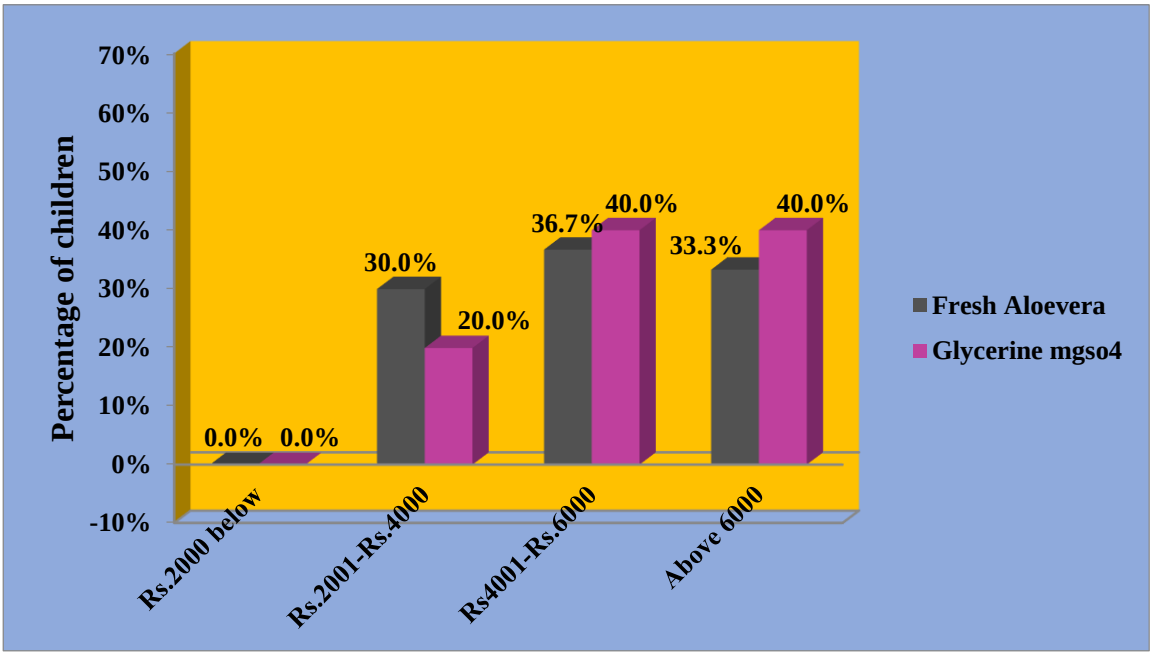

Figure 11: Multiple bar diagram comparing the percentage distribution of subjects with phlebitis according to their family income of the family per month.

The above bar diagram comparing the family income per month among children with phlebitis in interventional group I majority of the subjects 11 (36.7 %) were earned between Rs 4001 – 6000, 10 (33.3%) were earned more than Rs 6000, 9 (30.0 %) were earned between Rs 2001-4000 and none of them earned below Rs.2000. In interventional group II majority of the subjects 12 (40.0 %) were earned more than above Rs 6000, 12 (40.0 %) were earned between Rs 4001 – 6000, 6 (20.0 %) were earned between Rs 2001-4000, and none of them earned below Rs.2000.

Distribution of subjects according to duration of admission

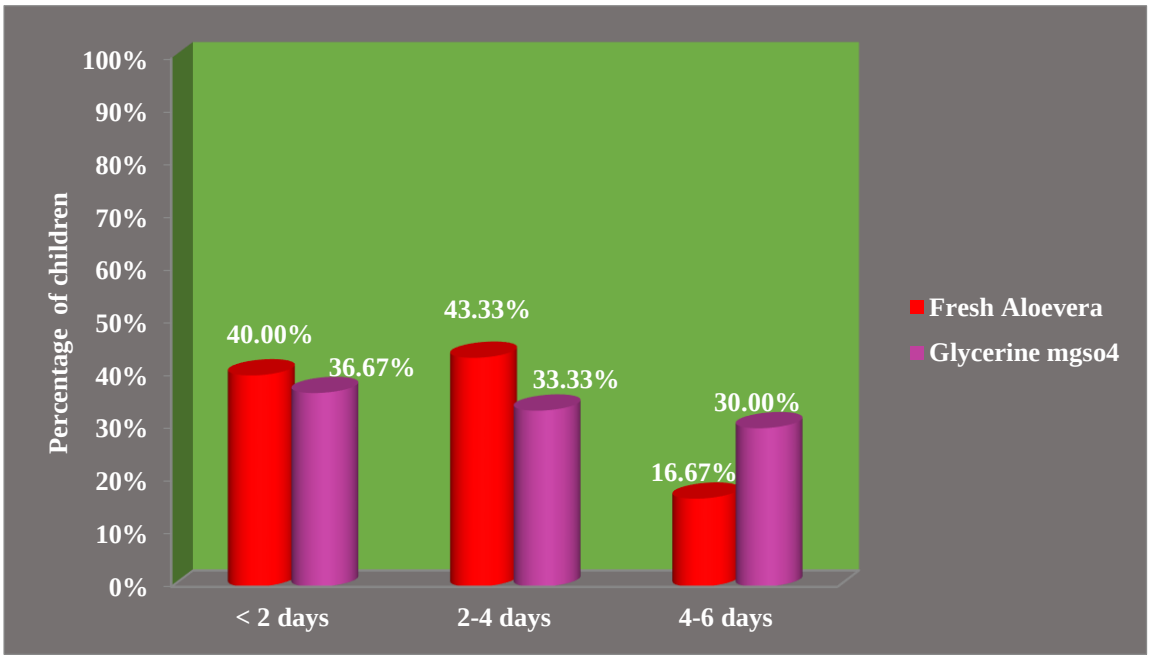

Figure 12: Cylinder diagram stating the percentage distribution of subjects with according to the duration of admission

The above cylinder diagram stating the duration of admission among children with phlebitis, in interventional group I majority of the subjects 13 (43.33 %) were hospitalized between 2-4 days, 12 (40.0 %) were less than 2 days and 5 (16.67 %) were hospitalized between 4-6 days. In interventional group II majority of the subjects 11 (36.67 %) were Less than 2 days, 10 (33.33 %) were hospitalized between 2-4 days and 9 (30.0 %) were hospitalized between 4-6 days.

Distribution of subjects according to body mass index

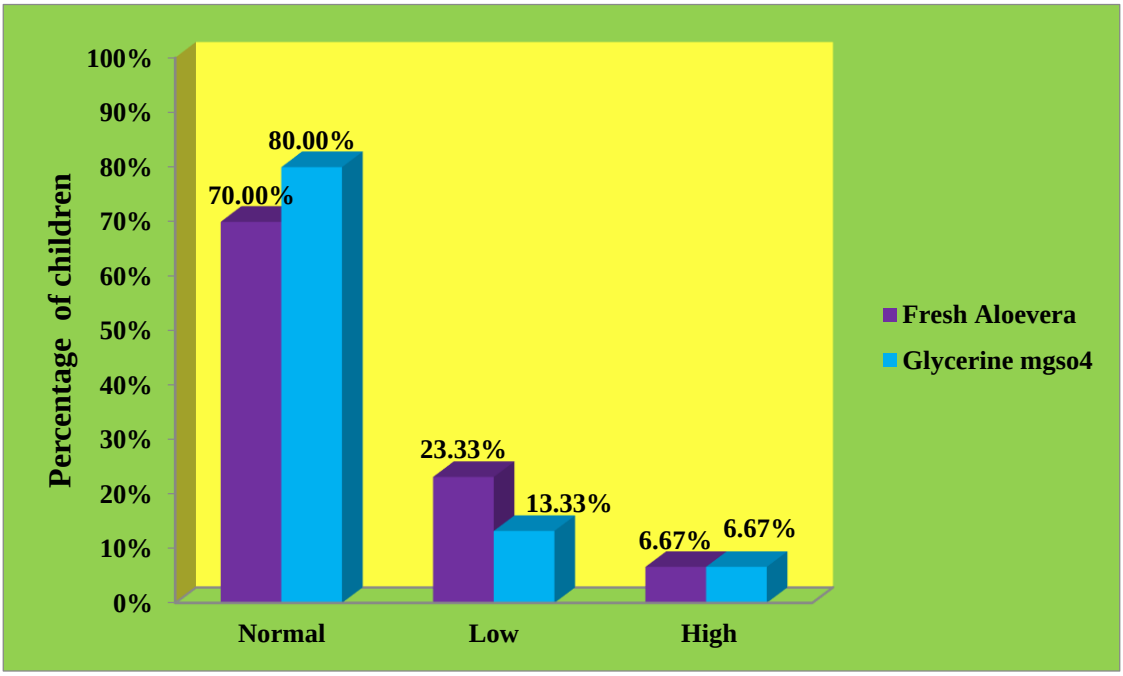

Figure 13: Multiple bar diagram depicts the percentage distribution of subjects with phlebitis according to their body mass index

The above multiple bar diagram depicts among children with phlebitis, in interventional group I majority of the subjects 21 (70.00 %) had normal BMI, 7 (23.33 %) had low BMI, 2 (6.67%) had high BMI. In interventional group II majority of the subjects 24 (80.00 %) had normal BMI 4 (13.33 %) had low BMI, and 2 (6.67 %) had high BMI

Distribution of subjects according to number of days in IV situ

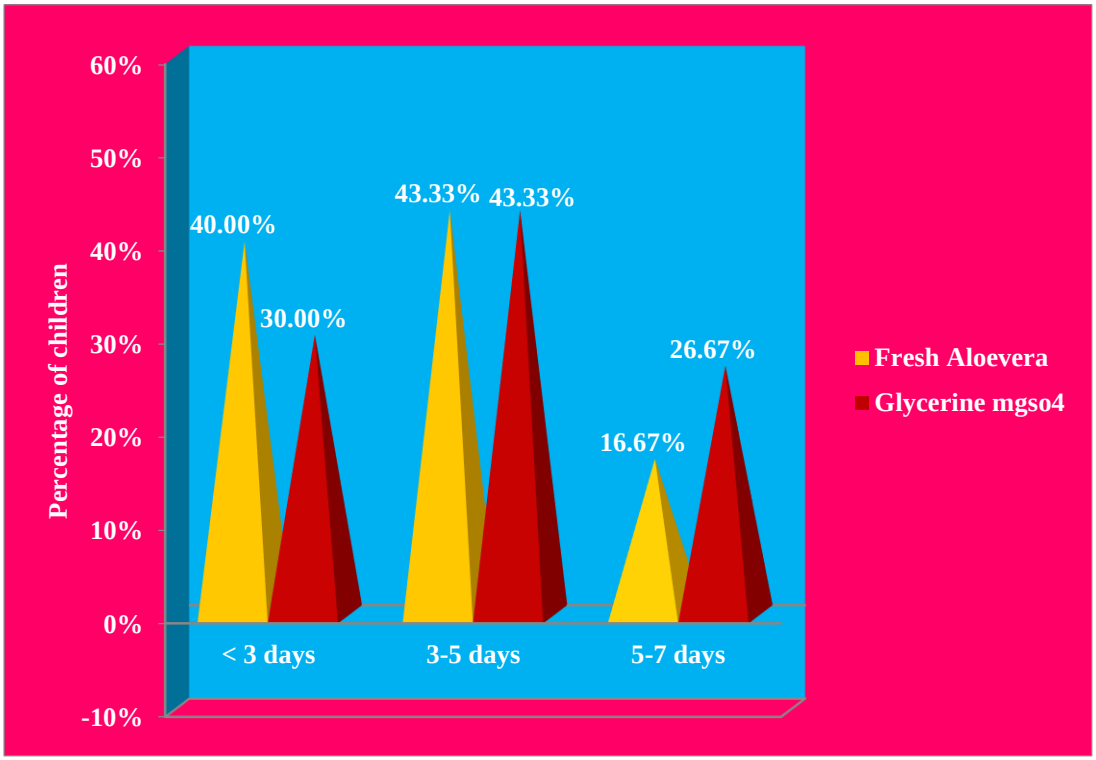

Figure 14: Cone diagram portrays the percentage distribution of subjects with phlebitis according to their number of days in IV situ

The above cone diagram portrays among children with phlebitis in interventional group I majority of the subjects 13 (43.33%) were had 3- 5 days , 12 (40,00 %) were had less than 3 days , and 5 (16.67 %) were had 5-7 days. In interventional group II majority of the subjects 13 (43.33 %) were had 3- 5 days, 9 (30.00 %) were had less than 3 days and 8 (26.67 %) were had 5-7 days.

Distribution of subjects according to frequency of changing dressing

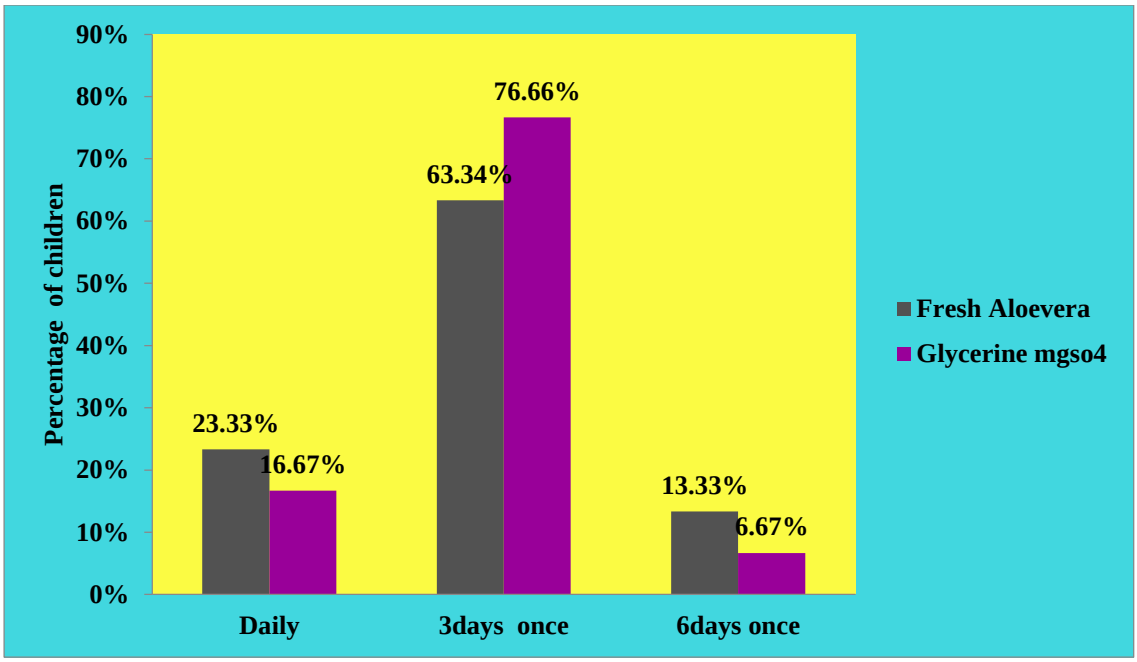

Figure 15: Multiple bar diagram comparing the percentage distribution of subjects with phlebitis according to their frequency of changing dressing

The above multiple bar diagram comparing among children with phlebitis in interventional group I majority of the subjects 19 (63.34 %) were changed once in 3 days, 7 (23.33%) were changed daily and 4 (13.33%) were changed once in 6 days . In interventional group II majority of the subjects 23 (76.66 %) were changed once in 3 days, 5 (16.67 %) were changed daily, and 2 (6.67 %) were changed once in 6 days.

Section-II

Distribution of the pre test level of phlebitis among children Interventional group I and Interventional group II

Table 2

Frequency and percentage distribution of pre-test level of phlebitis among children in Interventional group I and Interventional group II

n=60

Level of phlebitis	Group				χ^2
	Group I		Group-II		
	f	%	f	%	
Normal	0	0.00%	0	0.00%	χ^2=0.38 P=0.82 (NS)
Mild	15	50.00%	13	43.33%	
Moderate	13	43.33%	14	46.67%	
Severe	2	6.67%	3	10.00%	
Total	**30**	**100.00%**	**30**	**100.00%**	

*** P<0.05 - significant, **P<0.01- Highly significant, ***P<0.001 very Highly significant**

The above table 2 explain distribution of pre test level of phlebitis among children in Interventional group I and Interventional group II

In Interventional group I, the pre test level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13(43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level of phlebitis.

In Interventional group II, the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis, remaining 3 (10.00%) had severe phlebitis and none of them had normal level of phlebitis.

Pretest level of phlebitis score

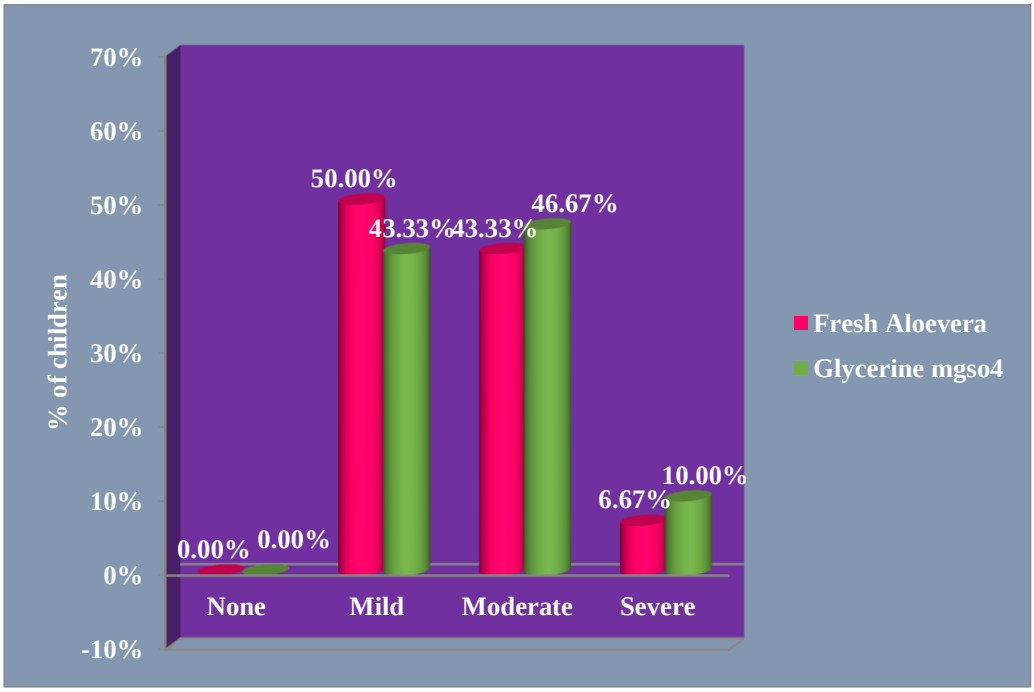

Figure : 16 Multiple cylinder diagram portrays distribution of pre-test level of phlebitis among Interventional group I and Interventional group II

The above multiple cylinder diagram depicts that In Interventional group I the pre test level of phlebitis , majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level of phlebitis.

In Interventional group II the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis, remaining 3 (10.00%) had severe phlebitis and none of them had normal level of phlebitis.

Table: 3: Pre test, mean, standard deviation and mean difference of children with phlebitis among Interventional group I and Interventional group II.

n=60

Group	Mean	SD	Mean Difference	Independent t-test
Group I	2.70	1.12	0.17	t=0.59 P=0.55 (NS)
Group II	2.87	1.04		

*** P<0.05 significant, **P<0.01- Highly significant, ***P<0.001 very Highly significant**

The above table 3 depicts that pre test mean score difference between children with phlebitis among Interventional group I and Interventional group II.

In Interventional group I, pre test mean score was 2.70 with the standard deviation 1.12 .Whereas in the Interventional group II, pre test mean score was 2.87 with the standard deviation 1.04 and mean difference was 0.17.This difference is small and it is not significant.

The Independent "t" test was done to find out difference between the Interventional group I and Interventional group II. The calculated "t" value 0.59 at p=0.55 level.

Section –III

Effectiveness on fresh Aloevera and glycerine magnesium sulphate on children with phlebitis

Table 4

Effectiveness on Fresh Aloevera and Glycerine magnesium sulphate on children with phlebitis

n=60

Group		Maximum score	Mean Phlebitis score	% of mean score	% of reduction score
Group I	**Pre test**	5	2.70	54.00%	20.00%
	Post test	5	1.70	34.00%	
Group II	**Pre test**	5	2.87	57.40%	36.8%
	Post test	5	1.03	20.60%	

The above table 4 portrays that effectiveness on Fresh Aloevera and Glycerine magnesium sulphate on children with phlebitis.

In Interventional group I the pre test mean score was 2.70 with % of mean score 54.00%. where as the post test mean score was 1.70 with % of mean score 34.00% and the percentage of reduction score was 20.00%

In Interventional group II the pre test mean score was 2.87 with % of mean score 57.4%. where as the post test mean score 1.03% with % of mean score 20.60% and the percentage of reduction score was 36.8%

The difference shows that effect of Glycerine magnesium sulphate on children with phlebitis than fresh Aloevera.

Effectiveness of fresh aloevera and glycerine magnesium sulphate on phlebitis

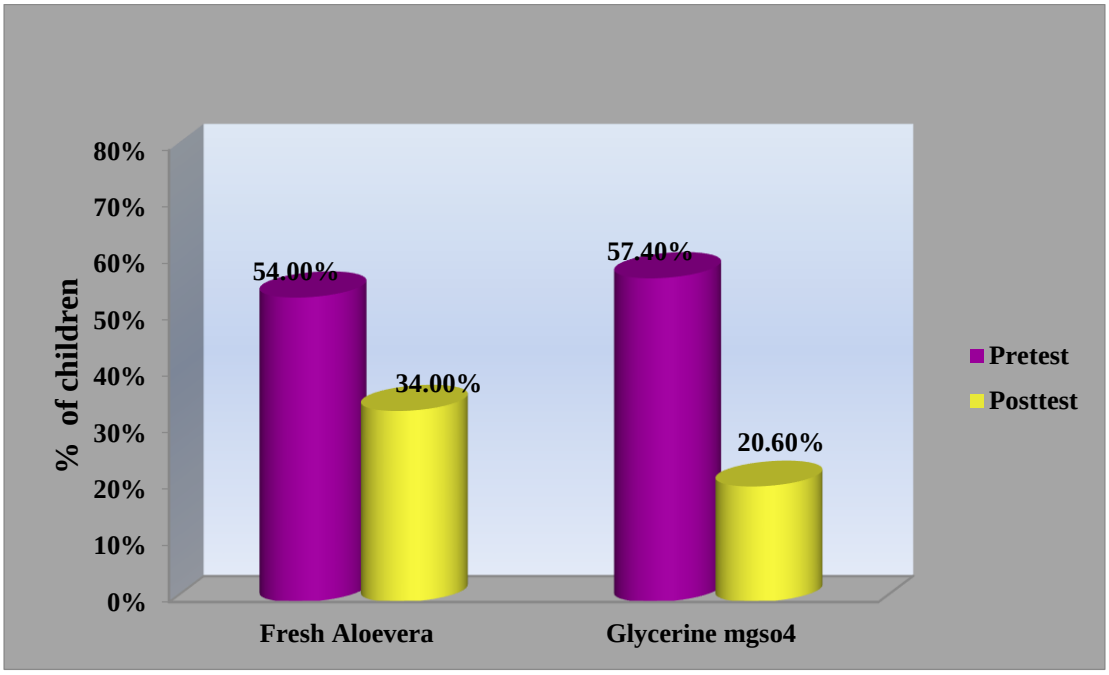

Figure 17 : Multiple cylinder diagram depicts the effectiveness of fresh Aloevera and glycerine magnesium sulphate on children with phlebitis

The above bar diagram depicts that in Interventional group I the pre test mean score was 2.70 with % of mean score 54.00%. where as the post test mean score was 1.70 with % of mean score 34.00% and the percentage of reduction score was 20.00%.

In Interventional group II the pre test mean score was 2.87 with % of mean score 57.4%. where as the post test mean score 1.03% with % of mean score 20.60% and the percentage of reduction score was 36.8%.

The difference shows that effect of Glycerine magnesium sulphate on children with phlebitis than fresh Aloevera.

Section-IV

Comparison of pre and post test level of children with phlebitis among Interventional group I and Interventional group II

Table 5

Frequency and percentage distribution of pre and post test level of children with phlebitis among Interventional group I (Fresh Aloevera)

n=60

Level of phlebitis	Group I				$\chi 2$
	Pre test		Post test		
	f	%	f	%	
Normal	0	0.00%	5	16.67%	**$\chi 2$=14.36 P=0.01**(S)**
Mild	15	50.00%	19	63.33%	
Moderate	13	43.33%	6	20.00%	
Severe	2	6.67%	0	0.00%	
Total	**30**	**100.00%**	**30**	**100.00%**	

*** P<0.05 - significant, **P<0.01- Highly significant, ***P<0.001 very Highly significant**

The above table 5 states that distribution of pre and post test level of phlebitis among Interventional Group I (Fresh Aloevera) and Interventional group II (Glycerine magnesium sulphate).

In Interventional group I the pre test level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level.

In Interventional group I the Post test level of phlebitis, majority of the subjects 19 (63.33%) had mild phlebitis, 6 (20.00%) had moderate phlebitis, remaining 15 (16.67%) had severe phlebitis and none of them had normal level.

In $\chi 2$=14.36, showed difference in the post test level of phlebitis among Interventional group I (fresh Aloevera) and interventional group II (Glycerine magnesium sulphate).

Pre test and post test level of phlebitis score in Interventional group I (fresh aloevera)

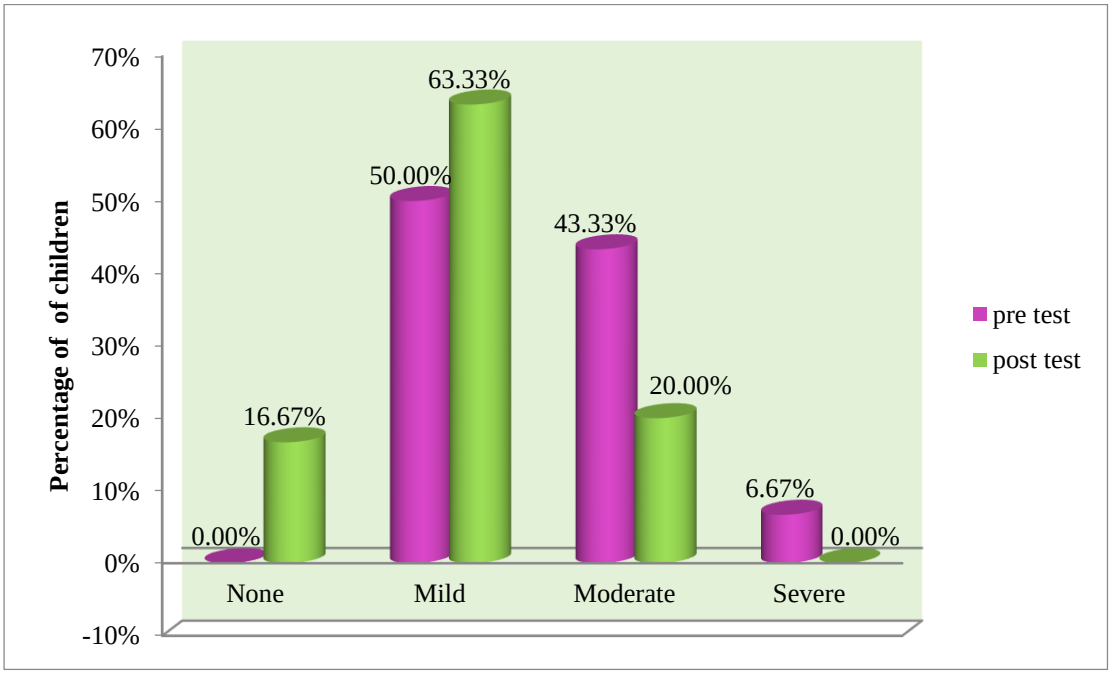

Fig 18: Multiple cylinder diagram portrays distribution of pre test and post test level of children with phlebitis among Interventional group I (Fresh Aloevera)

The above cylinder portrays that in Interventional group I the pre test level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level.

In Interventional group I the Post test level of phlebitis, majority of the subjects 19 (63.33%) had mild phlebitis, 6 (20.00%) had moderate phlebitis, remaining 15 (16.67%) none of them had normal level.

Table : 6 Frequency and percentage distribution of pre test and post test level of children with phlebitis among interventional group II (Glycerine magnesium sulphate)

n=60

Level of phlebitis	Group II				$\chi 2$
	Pre test		Post test		
	f	%	f	%	
Normal	0	0.00%	13	43.33%	**$\chi 2$=14.36 P=0.01**(S)**
Mild	13	43.33%	15	50.00%	
Moderate	14	46.67%	2	6.67%	
Severe	3	10.00%	0	0.00%	
Total	**30**	**100.00%**	**30**	**100.00%**	

*** P<0.05 - significant, **P<0.01- Highly significant, ***P<0.001 very Highly significant**

The above table 6 states that distribution of pre test and post test level of children with phlebitis among interventional group II (Glycerine magnesium sulphate)

In interventional group II the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis, remaining 3 (10.00%) had severe phlebitis and none of them had normal level

In interventional group II the post test, level of phlebitis , majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had normal level, remaining 2 (6.67%) had moderate phlebitis and None of them had severe level of phlebitis

In $\chi 2$=14.36, showed a difference in the pre test ad post test level of phlebitis among Interventional group II (Glycerine magnesium sulphate).

Pretest and posttest level of phlebitis score in Interventional group II

(Glycerine Magnesium sulphate)

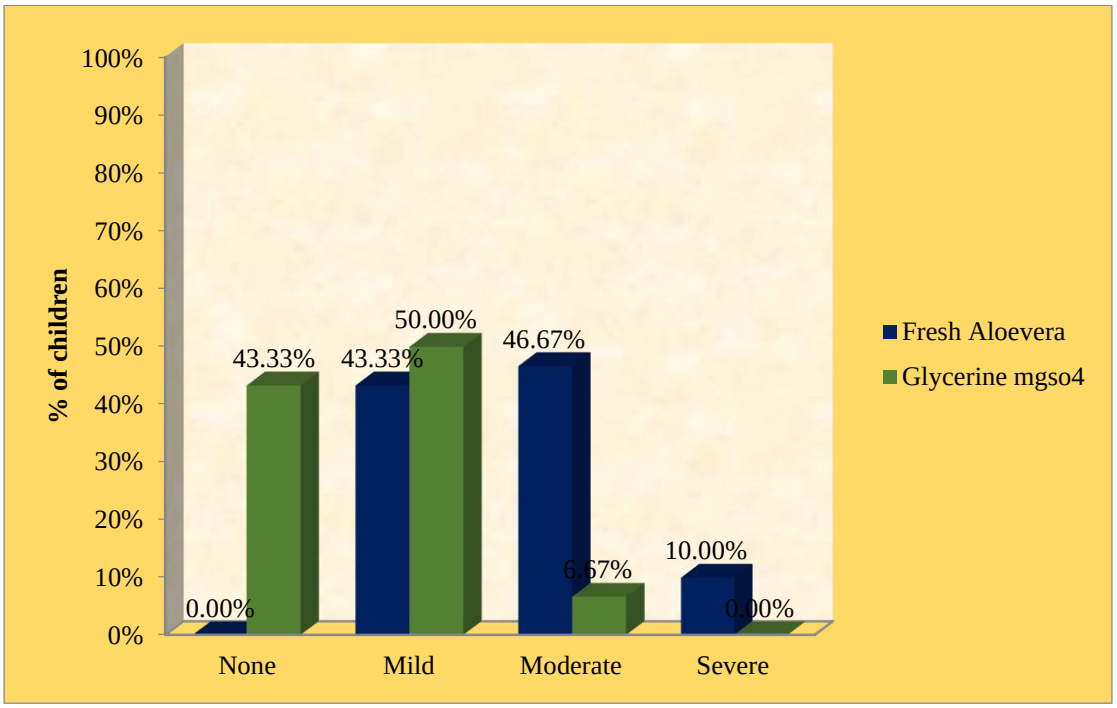

Fig 19 : Multiple bar diagram portrays distribution of pre test and post test level of children with phlebitis among Interventional group II (Glycerine magnesium sulphate)

The above multiple bar diagram portrays that In interventional group II the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis, remaining 3 (10.00%) had severe phlebitis and none of them had normal level

In interventional group I the post test, level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had normal level, remaining 2 (6.67%) had moderate phlebitis and None of them had severe level of phlebitis

Table: 7 Pre test and post test mean, standard deviation and mean score difference of children with phlebitis among Interventional group I (fresh aloevera) and Interventional group-II (Glycerine magnesium sulphate)

n=60

Interventional Group	Group				Mean difference	Paired t- test
	Pre test		Post test			
	Mean	SD	Mean	SD		
Group I (Fresh Aloevera)	**2.70**	**1.2**	**1.70**	**1.36**	1.00	**t=5.78 P=0.001***(S)**
Group-II (Glycerine magnesium sulphate)	**2.87**	**1.04**	**1.03**	**1.21**	1.84	**t=5.78 P=0.001***(S)**

*** P<0.05 - significant, **P<0.01- Highly significant, ***P<0.001 very Highly significant**

The above table 7 depicts that pre test and post test mean score difference of children with phlebitis among Interventional group I and Interventional group-II

In Interventional group I, the pre test mean score was 2.70 with standard deviation 1.12 and the post test mean score was 1.70 with the standard deviation 1.36, the mean difference was 1.00.

In Interventional group II, the pre test mean score was 2.87 with standard deviation 1.04 and the post test mean score was 1.03 with the standard deviation 1.21, the mean difference was 1.84.

The paired “t” test was done to find out difference between the pre test and post test among Interventional group I (fresh Aloevera). The calculated “t” test t=5.78 was greater than the table value which was significant at 0.001 level.

SECTION-V

Association between the post test level of phlebitis among children in Interventional group I and group II with their selected socio demographic and clinical variables.

Table 8

Association between post test level of phlebitis among children in Interventional group I (Fresh aloevera)

n=60

Socio demographic variable		Level of phlebitis						n	χ2
		None		Mild		Moderate			
		f	%	f	%	f	%		
Age	1- 3 years	0	0.0%	2	100.0%	0	0.0%	2	χ2=3.77 P=0.70(NS)
	4- 6 years	3	23.1%	8	61.5%	2	15.4%	13	
	7- 9 years	2	25.0%	4	50.0%	2	25.0%	8	
	10-12 years	0	0.0%	5	71.4%	2	28.6%	7	
Gender	Male	2	11.1%	13	72.2%	3	16.7%	18	χ2=1.64 P=0.43(NS)
	Female	3	25.0%	6	50.0%	3	25.0%	12	
Religion	Hindu	2	10.0%	14	70.0%	4	20.0%	20	χ2=2.61 P=0.62(NS)
	Christian	2	28.6%	4	57.1%	1	14.3%	7	
	Muslim	1	33.3%	1	33.3%	1	33.3%	3	
	Others	0	0.0%	0	0.0%	0	0.0%	0	
Residence	Urban	3	17.6%	11	64.7%	3	17.6%	17	χ2=0.14 P=0.93(NS)
	Rural	2	15.4%	8	61.5%	3	23.1%	13	
Educational status of mother	Primary education	3	17.6%	9	52.9%	5	29.4%	17	χ2=5.09 P=0.27(NS)
	Secondary education	2	33.3%	4	66.7%	0	0.0%	6	
	Non formal	0	0.0%	6	85.7%	1	14.3%	7	
Occupation of mother	Sedentary worker	2	66.7%	1	33.3%	0	0.0%	3	χ2=11.49 P=0.07(NS)
	Moderate worker	0	0.0%	4	66.7%	2	33.3%	6	
	Heavy worker	1	50.0%	0	0.0%	1	50.0%	2	
	Housewife	2	10.5%	14	73.7%	3	15.8%	19	

Educational status of father	Non formal	0	0.0%	5	100.0%	0	0.0%	5	**χ2=18.90 P=0.01**(S)**
	Primary education	0	0.0%	9	64.3%	5	35.7%	14	
	Secondary education	3	33.3%	5	55.6%	1	11.1%	9	
	Graduate	2	100.0%	0	0.0%	0	0.0%	2	
Occupation of father	Sedentary worker	0	0.0%	5	83.3%	1	16.7%	6	χ2=2.67 P=0.61(NS)
	Moderate worker	3	16.7%	11	61.1%	4	22.2%	18	
	Heavy worker	2	33.3%	3	50.0%	1	16.7%	6	
Type of family	Joint family	2	18.2%	7	63.6%	2	18.2%	11	χ2=0.05 P=0.97(NS)
	Nuclear family	3	15.8%	12	63.2%	4	21.1%	19	
Family income per month	Rs.2000 below	0	0.0%	0	0.0%	0	0.0%	0	χ2=5.23 P=0.26(NS)
	Rs.2001-Rs.4000	3	33.3%	5	55.6%	1	11.1%	9	
	Rs4001-Rs.6000	0	0.0%	9	81.8%	2	18.2%	11	
	Above 6000	2	20.0%	5	50.0%	3	30.0%	10	
Duration of admission	Less than 2 days	4	33.3%	8	66.7%	0	0.0%	12	**χ2=10.44 P=0.03*(S)**
	2-4 days	1	7.7%	9	69.2%	3	23.1%	13	
	4-6 days	0	0.0%	2	40.0%	3	60.0%	5	
Site of IV cannula	Radial vein	4	28.6%	10	71.4%	0	0.0%	14	**χ2=10.06 P=0.03*(S)**
	Median vein	1	9.1%	7	63.6%	3	27.3%	11	
	Median cubital vein	0	20.0%	2	40.0%	3	60.0%	5	
BMI	Normal	5	23.8%	15	71.4%	1	4.8%	21	**χ2=11.04 P=0.03*(S)**
	Low	0	0.0%	3	42.8%	4	57.2%	7	
	High	0	0.0%	1	50.0%	1	50.0%	2	
IV needle size	24 Gauge	3	18.8%	11	68.8%	2	12.5%	16	χ2=4.73 P=0.31(NS)
	22 Gauge	1	8.3%	8	66.7%	3	25.0%	12	
	18Gauge	1	50.0%	0	0.0%	1	50.0%	2	
Type of fluid	Crystalloids	4	15.4%	17	65.4%	5	19.2%	26	χ2=0.38 P=0.82(NS)
	Colloids	1	25.0%	2	50.0%	1	25.0%	4	
Type of drug	Antibiotics	3	30.0%	5	50.0%	2	20.0%	10	χ2=2.10 P=0.72(NS)
	Multivitamins	1	9.1%	8	72.7%	2	18.2%	11	
	Mixed	1	11.1%	6	66.7%	2	22.2%	9	
Restraint	Yes	2	20.0%	4	40.0%	4	40.0%	10	χ2=4.38 P=0.11(NS)
	No	3	15.0%	15	75.0%	2	10.0%	20	

Mode of infusion	Bolus	4	33.3%	7	58.3%	1	8.3%	12	$\chi 2=5.76$ P=0.21(NS)
	Short time	1	10.0%	7	70.0%	2	20.0%	10	
	Long duration	0	0.0%	5	62.5%	3	37.5%	8	
Device of infusion	Infusion drip	2	33.3%	3	50.0%	1	16.7%	6	$\chi 2=2.87$ P=0.57(NS)
	Microdrip set	3	16.7%	12	66.7%	3	16.7%	18	
	Syringe infusion	0	0.0%	4	66.7%	2	33.3%	6	
24hrs fluid flushed	<100ml	2	33.3%	2	33.3%	2	33.3%	6	$\chi 2=3.65$ P=0.45(NS)
	100-200ml	2	14.3%	9	64.3%	3	21.4%	14	
	>500ml	1	10.0%	8	80.0%	1	10.0%	10	
Duration of infusion	<2hrs/day	1	20.0%	4	80.0%	0	0.0%	5	$\chi 2=4.78$ P=0.57(NS)
	2-4hrs/day	2	20.0%	6	60.0%	2	20.0%	10	
	5-6hrs/day	1	9.1%	8	72.7%	2	18.2%	11	
	>6hrs/day	1	25.0%	1	25.0%	2	50.0%	4	
Number of days in IV situ	Less than 3 days	1	8.3%	10	83.3%	1	8.3%	12	$\chi 2=4.10$ P=0.39(NS)
	3-5 days	3	23.1%	7	53.8%	3	23.1%	13	
	5-7 days	1	20.0%	2	40.0%	2	40.0%	5	
Frequency of changing dressing	Daily	4	57.1%	3	42.9%	0	0.0%	7	**$\chi 2=11.48$ P=0.02*(S)**
	3days once	1	5.3%	13	68.4%	5	26.3%	19	
	6days once	0	25.0%	3	75.0%	1	20.0%	4	
Treatment for chronic disease	Yes	2	50.0%	2	50.0%	0	0.0%	4	$\chi 2=4.13$ P=0.12(NS)
	No	11	40.7%	26	86.67%	27	90.00%	3	
Disease suffering from infection	No	3	11.5%	17	65.4%	6	23.1%	26	**$\chi 2=8.07$ P=0.02*(S)**
	Yes	1	14.3%	2	28.6%	4	57.1%	7	

* P<0.05 - significant, **P<0.01- Highly significant, ***P<0.001 very Highly significant

The above table 8 explains that there is a significant association between the post test level of children with phlebitis with their selected socio demographic and clinical variables, Chi square analysis reveals that there was a significant association between children with phlebitis and their fathers had primary education

(χ2=18.90 P=0.01), duration of admission 2-4 days (χ2=10.44 P=0.03), with Radial vein cannulation (χ2=10.06 P=0.03) and also had normal BMI (χ2=11.04 P=0.03) and who had change the dressing once in 3 days (χ2=11.48 P=0.02) and free from infection (χ2=8.07 P=0.02) All other variables was not significantly associated.

Table: 9 Association between post test level of phlebitis among children in Interventional group II(Glycerine magnesium sulphate)

n=60

Socio demographic variable		Level of phlebitis						n	χ2
		Mild		Moderate		Severe			
		f	%	f	%	f	%		
Age	1- 3 years	1	50.0%	1	50.0%	0	0.0%	2	χ2=3.68 P=0.72(NS)
	3 - 6 years	4	36.4%	7	63.6%	0	0.0%	11	
	6- 9 years	3	33.3%	5	55.6%	1	11.1%	9	
	9-12 years	5	62.5%	2	25.0%	1	12.5%	8	
Gender	Male	9	45.0%	10	50.0%	1	5.0%	20	χ2=1.68 P=0.43(NS)
	Female	4	40.0%	5	50.0%	1	10.0%	10	
Religion	Hindu	10	62.5%	5	31.3%	1	6.3%	16	χ2=6.88 P=0.14(NS)
	Christian	2	20.0%	8	80.0%	0	0.0%	10	
	Muslim	1	25.0%	2	50.0%	1	25.0%	4	
	Others	0	0.0%	0	0.0%	0	0.0%	0	
Residence	Urban	7	43.8%	8	50.0%	1	6.3%	16	χ2=0.27 P=0.87(NS)
	Rural	6	42.9%	7	50.0%	1	7.1%	14	
Educational status of mother	Non formal	0	0.0%	8	80.0%	2	20.0%	10	**χ2=16.10 P=0.01**(S)**
	Primary education	6	50.0%	6	50.0%	0	0.0%	12	
	Secondary education	7	87.5%	1	12.5%	0	0.0%	8	
Occupation of mother	Sedentary worker	1	25.0%	3	75.0%	0	0.0%	4	χ2=5.55 P=0.47(NS)
	Moderate worker	2	40.0%	2	40.0%	1	20.0%	5	
	Heavy worker	2	66.7%	1	33.3%	0	0.0%	3	
	Housewife	8	44.4%	9	50.0%	1	5.6%	18	
Educational status of father	Non formal	1	20.0%	3	60.0%	1	20.0%	5	χ2=3.01 P=0.55(NS)
	Primary education	7	41.2%	9	52.9%	1	5.9%	17	
	Secondary education	5	62.5%	3	37.5%	0	0.0%	8	
	Graduate	0	0.0%	0	0.0%	0	0.0%	0	
Occupation of father	Sedentary worker	4	66.7%	2	33.3%	0	0.0%	6	χ2=5.31 P=0.25(NS)
	Moderate worker	8	50.0%	6	37.5%	2	12.5%	16	
	Heavy worker	1	12.5%	7	87.5%	0	0.0%	8	

Type of family	Joint family	3	100.0%	0	0.0%	0	0.0%	3	$\chi 2=0.07$
	Nuclear family	10	41.7%	15	50.0%	2	8.3%	27	P=0.96(NS)
Family income	Rs.2000 below	0	0.0%	0	0.0%	0	0.0%	0	$\chi 2=2.20$ P=0.59(NS)
	Rs.2001-Rs.4000	1	16.7%	4	66.7%	1	16.7%	6	
	Rs4001-Rs.6000	6	50.0%	6	50.0%	0	0.0%	12	
	Above 6000	6	50.0%	5	41.7%	1	8.3%	12	
Duration of admission	Less than 2 days	8	72.7%	3	27.3%	0	0.0%	11	**$\chi 2=10.87$ P=0.02*(S)**
	2-4 days	4	40.0%	6	60.0%	0	10.0%	10	
	4-6 days	1	11.1%	6	66.7%	2	22.2%	9	
Site of IV cannula	Radial vein	9	64.3%	5	35.7%	0	0.0%	14	**$\chi 2=22.89$ P=0.001***(S)**
	Median vein	4	30.8%	9	69.2%	0	0.0%	13	
	Median cubital vein	0	0.0%	1	33.3%	2	66.7%	3	
BMI	Normal	13	54.2%	9	37.5%	2	8.3%	24	$\chi 2=7.50$ P=0.11(NS)
	Low	0	0.0%	4	100.0%	0	0.0%	4	
	High	0	0.0%	2	100.0%	0	0.0%	2	
IV needle size	24 Gauge	9	50.0%	8	44.4%	1	5.6%	18	$\chi 2=0.82$ P=0.66(NS)
	22 Gauge	4	33.3%	7	58.3%	1	8.3%	12	
	18Gauge	0	0.0%	0	0.0%	0	0.0%	0	
Type of fluid	Crystalloids	11	47.8%	10	43.5%	2	8.7%	23	$\chi 2=1.90$ P=0.36(NS)
	Colloids	2	28.6%	5	71.4%	0	0.0%	7	
Type of Drug	Antibiotics	10	50.0%	8	40.0%	2	10.0%	20	$\chi 2=2.88$ P=0.57(NS)
	Multivitamins	2	33.3%	4	66.7%	0	0.0%	6	
	Mixed	1	25.0%	3	75.0%	0	0.0%	4	
Restraint	Yes	8	61.5%	4	30.7%	1	7.7%	13	$\chi 2=3.48$ P=0.17(NS)
	No	5	29.4%	11	64.7%	1	5.9%	17	
Mode of infusion	Bolus	7	50.0%	5	35.7%	2	14.3%	14	$\chi 2=3.98$ P=0.40(NS)
	Short time	5	41.7%	7	58.3%	0	0.0%	12	
	Long duration	1	25.0%	3	75.0%	0	0.0%	4	
Device of infusion	Infusion drip	6	54.5%	4	36.4%	1	9.1%	11	$\chi 2=1.97$ P=0.44(NS)
	Microdrip set	6	40.0%	8	53.3%	1	6.7%	15	
	Syringe infusion	1	25.0%	3	75.0%	0	0.0%	4	

24hrs fluid flushed	<100ml 100-200ml >500ml	7 3 3	70.0% 30.0% 30.0%	3 5 7	30.0% 50.0% 70.0%	0 2 0	0.0% 20.0% 0.0%	10 10 10	$\chi 2=8.06$ P=0.08(NS)
Duration of infusion	<2hrs/day 2-4hrs/day 5-6hrs/day >6hrs/day	5 7 1 0	71.4% 53.8% 12.5% 0.0%	1 5 7 2	14.3% 38.5% 87.5% 100.0%	1 1 0 0	14.3% 7.7% 0.0% 0.0%	7 13 8 2	$\chi 2=10.90$ P=0.09(NS)
Number of days in IV situ	Less than 3 days 3-5 days 5-7 days	7 6 0	77.8% 46.2% 0.0%	2 7 6	22.2% 53.8% 75.0%	0 0 2	0.0% 0.0% 25.0%	9 13 8	**$\chi 2=13.88$** **P=0.01**(S)**
Frequency of changing dressing	Daily 3days once 6days once	3 10 0	60.0% 43.4% 0.0%	2 13 0	40.0% 56.5% 0.0%	0 0 2	0.0% 0.0% 100.0%	5 23 2	**$\chi 2=30.48$** **P=0.001***(S)**
Treatment for chronic disease	Yes No	2 11	66.7% 40.7%	1 14	33.3% 51.9%	0 2	0.0% 7.4%	3 27	$\chi 2=0.82$ P=0.66(NS)
suffering from infection	Yes No	0 13	0.0% 52.0%	5 10	100.0% 40.0%	0 2	0.0% 8.0%	5 25	**$\chi 2=6.00$** **P=0.05*(S)**

The above table 9 explains that there is a significant association between the post test level of children with phlebitis with their selected socio demographic and clinical variables among interventional group II (Glycerine magnesium sulphate). Chi square analysis reveals that there was a significant association between the children with phlebitis and their mother's educational status was non formal education ($\chi 2=16.10$ P=0.01), duration of admission less than 2 days ($\chi 2=10.87$ P=0.02) , with radial vein cannulation ($\chi 2=22.89$ P=0.001), less than 3 days of IV situ ($\chi 2=13.88$ P=0.01) and changing the dressing daily ($\chi 2=30.48$ P=0.001) and disease suffering from infection ($\chi 2=6.00$ P=0.05) All other variables was not significantly associated.

DISCUSSION

CHAPTER - V

DISCUSSION

This chapter deals to find meaningful answers to research questions, the collected data must be processed, analyzed in an order and coherent fashion, so that patterns and relationship can be discussed.

Based on the objectives of the study and hypotheses, this chapter deals with the detailed discussion of the result of the data interpreted from the statistical analysis. The purpose of the study was to evaluate the effectiveness of topical application of fresh aloevera versus Glycerine Magnesium Sulphate on Children with Phlebitis at Government Rajaji Hospital, Madurai. 60 samples were selected by simple random sampling technique. The phlebitis level of children was assessed with modified visual infusion phlebitis scale.

The objectives of the study were

- To assess the level of phlebitis among children admitted at GRH, Madurai.
- To evaluate the effectiveness of application of fresh Aloevera in interventional group I and Glycerine Magnesium sulphate in Interventional group II among children with phlebitis.
- To compare the effectiveness of fresh Aloevera in interventional group I and Glycerine magnesium sulphate in interventional group II among children with phlebitis.
- To associate the level of phlebitis among children admitted in GRH, Madurai with selected socio demographic variables and clinical variables.

The following hypotheses were tested at 0.05 level of significance

Hypotheses

H_1: There is a significant difference between the pre and post test level of phlebitis among children in interventional group I and interventional group II.

H_2: There is a significant difference between the post test level of phlebitis among children in interventional group I and interventional group II.

H_3: There is a significant association between the level of phlebitis among children admitted GRH, Madurai with their selected socio demographic and clinical variables.

The findings of the study were discussed under the following heading

- Distribution of socio demographic and clinical variables among children with phlebitis both in interventional group I and interventional group II
- Distribution of pre test level of phlebitis among children interventional group I and interventional group II
- Effectiveness on Fresh aloevera and Glycerine magnesium sulphate on children with phlebitis.
- Comparison of post test level of children with phlebitis among interventional group I and interventional group II
- Association between the post test level of phlebitis among children in interventional group I and group II (Glycerine magnesium sulphate) with their selected socio demographic and clinical variables

According to **villacampa (2008),** reviewed a national multicentric epidemiological study having the institutional participation of 10 centers in Spanish. In the study 381 complications appeared in the 2701 peripheral catheters studied, which represents an incidence level of 14.11% they reviewed 8700 treatment records.

This study proved that the implementation strategy to improve the quality care reduces non instrumental complications. (persistent pain at the entrance point, extravasations or edema, first, second or third degree phlebitis and infections associated with catheters).

5.1 Description of socio demographic variables and clinical variables among the children with phlebitis

- It is interesting the note that, while mentioning about the age group**,** in interventional group I, majority of the subjects 13 (43.3 %) belongs to the age group between 4 - 6 years. In interventional group II 11 (36.6 %) belongs to the age group between 4 - 6 years.
- With regard to the gender**,** in interventional group I, majority of the subjects 18 (60.0%) were male children. In interventional group II 20 (66.7%) were male children.
- Based on the religion, in interventional group I, majority of the subjects 2 (66.7 %) were Hindu . In interventional group II 16 (53.3%) were Hindu.
- As far as place of residence**,** in interventional group I, majority of the subjects 17 (56.7%) hailed from rural area. In interventional group II 16 (53.3 %) hailed from rural area.
- When discussing educational status of the mother**,** in interventional group I, majority of the subjects 17 (56.7 %) studied upto primary education. In interventional group –II 12 (40.0%) had non formal education .
- Regarding the occupations of Mothers**,** in interventional group I, majority of the subjects 19 (63.3 %) were house wife. In interventional group II 18 (60.0%) were house wife.

- When discussing educational status of the father**,** in interventional group I, majority of the subjects 14 (46.6 %) studied upto primary school education . In interventional group II 17 (56.6%) studied upto primary school education.
- Regarding the occupation of fathers**,** in interventional group I, majority of the subjects 18 (60.0 %) were moderate worker .In interventional group II 16 (53.3 %) were moderate worker.
- With respect of the type of family, in interventional group I, majority of the subjects 19 (63.7%) belongs to nuclear family .In interventional group II 20 (66.7 %) belongs to nuclear family.
- While comparing the family income per month**,** in interventional group I, majority of the subjects 11 (36.7 %) were earned between Rs 4001 – 6000. In interventional group II 12 (40.0 %) were earned more than above Rs 6000.
- With stating the duration of admission, in interventional group I, majority of the subjects 13 (43.33 %) were hospitalized between 2-4 days . In interventional group II 11 (36.67 %) were hospitalized between Less than 2 days.
- While considering the site of IV cannula in interventional group I, majority of the subjects 14 (46.67 %) were radial vein. In interventional group II 14 (46.67%) were radial vein.
- According to BMI, in interventional group I, majority of the subjects 21(70.00 %) had normal BMI. In interventional group II 24 (80.00 %) had normal BMI .
- On the basis of Intravenous catheter needle size, in interventional group I, majority of the subjects 16 (53.33 %) had 24 gauge. In interventional group II 18 (60.00 %) had 24 gauge.

- Based on type of fluids, in interventional group I, majority of the subjects 26 (86.67%) were receiving crystalloids. In interventional group II 23 (76.67 %) were receiving crystalloids.
- On the basis on type of drugs**,** in interventional group I, majority of the subjects 11 (36.67%) were receiving multi vitamins. In interventional group II 20 (66.67%) were receiving antibiotics.
- When identifying the use of restraints, in interventional group I, majority of the subjects 20 (66.67 %) were not had restraint In interventional group II 17 (56.67 %) were not had restraint.
- Based on Mode of Infusion, in interventional group I, majority of the subjects 12 (40.00 %) were receiving bolus. In interventional group II 14 (46.67%) were receiving bolus.
- According to device of infusion in interventional group I, majority of the subjects 18 (60.00 %) were in Microdrip set .In interventional group II 15 (50.00%) were in Microdrip set.
- While denoting the total amount of fluid flushed in 24 hours in interventional group I, majority of the subjects 14 (46.67%) were had 100- 200 ml of fluid flushed. In interventional group II 10 (33.33 %) were had less than 100 ml of fluid flushed.
- Considering the duration of Infusion, in interventional group I, majority of the subjects 11 (36.67%) were received 5-6 hours / day. In interventional group II 13 (43.33%) of them were received 2-4 hours / day.
- With regard to number of days in IV situ in interventional group I, majority of the subjects 13 (43.33%) were had 3- 5 days. In interventional group II 13 (43.33 %) were had 3- 5 days.

- While comparing the frequency of changing catheter site dressing in interventional group I, majority of the subjects 19 (63.34 %) were changed once in 3 days. In interventional group II 23 (76.66 %) were changed once in 3 days.
- Regarding treatment for chronic disease, in interventional group I, majority of the subjects 26 (86.67%) had not taken treatment for chronic disease. In interventional group II 27 (90.00 %) had not taken treatment for chronic disease.
- Based on Suffering from Infection, in interventional group I, majority of the subjects 23 (76.67 %) were not suffering infection. In interventional group II 25 (83.33 %) were not suffering from infection.

5.2 Discussion of subjects based on its objectives

The first objective of the study was to assess the level of phlebitis among children admitted at GRH, Madurai

In Interventional group I, the pre test level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13(43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level mean score was 2.70 with the standard deviation 1.12 .

In Interventional group II, the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis, remaining 3 (10.00%) had severe phlebitis and none of them had normal level mean score was 2.87 with the standard deviation 1.04 and mean difference was 0.17.

The present study findings was supported by a study done by **Elessandra Souza et al.(2014)**, To assess the prevalence of phlebitis, related to the use of peripheral intravenous devices in children in a teaching hospital A quantitative, descriptive

and retrospective study, based in data taken from the phlebitis notification form related to peripheral intravenous therapy in pediatric intensive care unit in the city of Curitiba, in the Brazilian state of Paraná It results showed total of 1306 catheters, 339 cases of phlebitis were notified (prevalence of 26%) in the three-year period. The prevalence of phlebitis was 34% in children aged from 0 to 2 years and was 30.2% (n=179) among female children. Regarding the classification of the cases of phlebitis, 82.6% (n=280) were Grade 1, and the mean dwell-time of the device was 49.92 ± 43.19 hours. The study concluded that the data presented here demonstrate a high prevalence of phlebitis in pediatric patients, and the need to seek measures capable of reducing this event.

The second objective of the study was to evaluate the effectiveness of application of fresh Aloevera in group I and Glycerine Magnesium sulphate in group II among children with phlebitis.

In Interventional group I, the pre test level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level. Whereas the Post test level of phlebitis, majority of the subjects 19 (63.33%) had mild phlebitis, 6 (20.00%) had moderate phlebitis, remaining 15 (16.67%) had severe phlebitis and none of them had normal level In $\chi 2=14.36$, showed a difference in the pre test ad post test level of phlebitis among Interventional group-I (Fresh Aloevera).

In interventional group II, the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis, remaining 3 (10.00%) had severe phlebitis and none of them had normal level . whereas the post test, level of phlebitis , majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had normal level, remaining 2(6.67%) had moderate phlebitis and None of them had severe level of phlebitis In $\chi 2=14.36$, showed a

difference in the pre test ad post test level of phlebitis among Interventional group II (Glycerine magnesium sulphate).

Chowchen (1995) conducted a comparative study on effect of aloevera to reduce pain and edema due to thrombophlebitis. Twenty seven patients with thrombophlebitis were selected in experimental group; they were treated with aloevera gel compared with twenty seven with Vaseline gauze. It results showed that in experimental group statistical analysis by using't' test and the value of p 0.001 was statistically significant. This study was concluded that shows the effectiveness of aloevera gel on inflammatory conditions were greater than the control group who received Vaseline gauze.

The present study was supported by **Brincy Loyolla D'souza (2016)** was conducted Quasi experimental study to determine the effectiveness magnesium sulphate crystal fomentation versus Glycerin magnesium sulphate paste application for phlebitis among children receiving peripheral infusion. The study was conducted at Regional Advance Pediatric Care Centre (RAPCC), Mangalore The study sample consisted of 60 children with phlebitis, where30children were placed in group I, treated with magnesium sulphate crystal fomentation and 30 children were placed in group II, Treated with glycerin magnesium sulphate paste application .Purposive sampling technique was used to select the children. The result showed a mean pre treatment scores of phlebitis were significantly reduced after the treatment with magnesium sulphate fomentation and with glycerin magnesium sulphate paste application. The mean post treatment score of phlebitis at $p<0.05$.The study concluded that Glycerin magnesium sulphate paste was effective in reducing swelling and indurations when compared to magnesium sulphate crystal fomentation.

Hence the stated Hypothesis H_1 there is a significant difference between pretest and post test level of phlebitis among children in group I and group II in Government Rajaji hospital, Madurai was accepted.

The third objective of the study was compare the effectiveness of fresh Aloevera in group I and Glycerine magnesium sulphate in group II among children with phlebitis.

In Interventional group I the pre test mean score was 2.70 with % of mean score 54.00%. where as the post test mean score was 1.70 with % of mean score 34.00% and the percentage of reduction score was 20.00%.

In Interventional group II the pre test mean score was 2.87 with % of mean score 57.4%. where as the post test mean score 1.03% with % of mean score 20.60% and the percentage of reduction score was 36.8%.

The difference shows that effect of Glycerine magnesium sulphate on children with phlebitis than fresh Aloevera.

The present study was supported by **Junia.D. Susanna et al, (2014),** comparative study was done effectiveness of fresh aloevera and glycerine magnesium sulphate application on phlebitis among children Two group pre-test post-test time series design was used for the study. The sample consisted of 60 children who were purposively assigned to fresh aloevera group (N=30) and glycerine magnesium sulphate group (n=30). An observation checklist was used as tool for assessing the severity of phlebitis. The result showed that There was a significant difference in mild phlebitis ($Z=2.16$, $P<0.05$), in moderate phlebitis ($Z=2.11$, $P<0.05$), in severe phlebitis ($Z=2.68$, $P<0.05$) in fresh aloevera and glycerine magnesium sulphate application based on the level of severity of phlebitis. Thus the

study was concludes that there was a significant difference in both fresh Aloevera and glycerine magnesium sulphate group on the severity of phlebitis.

Hence the stated Hypothesis H_2 there is a significant difference between the post test level of phlebitis among children in group I and group II Government Rajaji hospital, Madurai was accepted.

To associate the level of phlebitis among children admitted in GRH, Madurai with selected socio demographic variables and clinical variables.

In order to find out association between the level of phlebitis and selected socio demographic variable and clinical variables in Interventional group I (Fresh Aloevera) Chi square analysis reveals that there was a significant association between children with phlebitis and their fathers had primary education ($\chi 2$=18.90 P=0.01), duration of admission 2-4 days ($\chi 2$=10.44 P=0.03), with Radial vein cannulation ($\chi 2$=10.06 P=0.03) and also had normal BMI ($\chi 2$=11.04P=0.03) and who had change the dressing once in 3 days ($\chi 2$=11.48 P=0.02) and free from infection ($\chi 2$=8.07 P=0.02) All other variables was not significantly associated.

In order to find out association between the level of phlebitis and selected socio demographic variable and clinical variables in Among Interventional group II (Glycerine magnesium sulphate) Chi square analysis reveals that there was a significant association between the children with phlebitis and their mother's educational status was non formal education ($\chi 2$=16.10 P=0.01), duration of admission less than 2 days ($\chi 2$=10.87 P=0.02) , with radial vein cannulation ($\chi 2$=22.89 P=0.001), less than 3 days of IV situ ($\chi 2$=13.88 P=0.01) and changing the dressing daily ($\chi 2$=30.48 P=0.001) and disease suffering from infection ($\chi 2$=6.00 P=0.05) All other variables was not significantly associated.

The present study was supported by **Amanda Karina de et all (2014)** retrospective cohort study was conducted To identify risk factors for phlebitis related to peripheral intravenous catheters (PIC) in children The results concluded that From 338 children, nine (2.7%) developed phlebitis. None of the demographic characteristics influenced significantly the development of phlebitis. Regarding to the therapy, there were significant: the use of the PIC for more than five days (p = 0.001), intermittent maintenance (p = 0.001) and greater time permanence of the PIC (p = 0.006). The risk factors were: the presence of predisposing conditions to puncture failure (p = 0.041, OR = 4.645), history of complications (p < 0.001, OR = 40.666); administration of drugs or solutions with extreme pH and osmolarity (p = 0.004, OR = 7.700).The study concluded that The occurrence of the phlebitis did not showed association with demographic characteristics and therapy aspects that represent risk factors, were predisposing conditions for puncture failure, previous complications, drugs administration and solutions with pH extremes and osmolarity.

Hence the stated Hypothesis H_3 there is a significant association between the levels of phlebitis among children admitted GRH, Madurai with their selected socio demographic variables and clinical variables was accepted.

SUMMARY
&
CONCLUSION

CHAPTER - VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATION

This chapter presents the summary of the study conclusion drawn, clarifies the limitation of the study, the implications and the recommendations, different areas like nursing practice, nursing education, nursing administration and nursing research deserve implication.

6.1 Summary of the study

"A study to evaluate the effectiveness of topical application of fresh aloevera versus Glycerine Magnesium Sulphate on Children with Phlebitis "at Government Rajaji Hospital Madurai".

Objectives of the study were

- To assess the level of phlebitis among children admitted at GRH, Madurai
- To evaluate the effectiveness of application of fresh Aloevera in interventional group I and Glycerine Magnesium sulphate in interventional group II among children with phlebitis
- To compare the effectiveness of fresh Aloevera in interventional group I and Glycerine magnesium sulphate in interventional group II among children with phlebitis.
- To associate the level of phlebitis among children admitted in GRH, Madurai with selected socio demographic variables and clinical variables.

The following hypotheses tested were

H_1: There is a significant difference between the pre and post test level of phlebitis among children in interventional group I and interventional group II.

H_2: There is a significant difference between the post test level of phlebitis among children in interventional group I and interventional group II.

H_3: There is a significant association between the level of phlebitis among children admitted Government Rajaji Hospital, Madurai with their selected socio demographic clinical variables.

The Study assumptions were

- Children receiving intravenous therapy have varying the level of phlebitis.
- Children with phlebitis may have either fresh aloevera effective or glycerine magnesium sulphate is effective

The study was conducted in Paediatric wards at Government Rajaji Hospital, Madurai. The conceptual framework adopted was Modified Visual Infusion Phlebitis scale. Quantitative evaluative approach true experimental pre test – post test design research design was adopted. The independent variable was Fresh Aloevera for Interventional Group I, Glycerine Magnesium sulphate for Interventional Group II and the dependent variable was Phlebitis. Simple random sampling technique was adopted to select 30 samples for group I and 30 samples for group II by picking up the available samples who fulfill the inclusion criteria during the period of data collection. The accessible population for the study was 30 samples for Interventional group I and 30 samples for Interventional group II, children with phlebitis admitted in Paediatric wards at Government Rajaji Hospital, Madurai. Intervention carried out was topical application of fresh Aloevera for group I and Glycerine magnesium sulphate for Interventional group II.

The tool used in this study consists of two sections.

Section I

- Socio demographic variables

Section II

- Clinical Variables

Section III

Modified Visual Infusion phlebitis Scale Content validity was obtained from five experts. In two experts in the field of Medicine and Child Health nursing and three experts in the field of child health nursing. Pilot study was conducted to find out the feasibility of the study and it did not show any major flaw in the design of the study. On the 1st day, After data collection with modified Visual Infusion phlebitis Scale guide, the level of phlebitis was assessed, followed by application of fresh Aloevera for Interventional group I and application of Glycerine magnesium sulphate for Interventional group II three times daily for 2 consecutive days. Post test was conducted on 3rd day using the same Visual Infusion phlebitis scale, as the same procedure was followed for all the 60 samples. Data was collected for six weeks from 4.06.2018 to 13.07.2018 and based on the objectives and hypotheses, data were analyzed using descriptive and inferential statistics.

6.2 Major findings of the study

According to the age group in interventional group I, majority of the subjects 13 (43.3 %) belongs to the age group between 4 - 6 years. In interventional group II 11 (36.6 %) belongs to the age group between 4 - 6 years.

With regard to the gender in interventional group I, majority of the subjects 18 (60.0%) were male children. In interventional group II 20 (66.7%) were male children.

Based on the religion in interventional group I, majority of the subjects 2 (66.7 %) were Hindu. In interventional group II 16 (53.3%) were Hindu.

As far as place of residence in interventional group I, majority of the subjects 17 (56.7%) hailed from rural area. In interventional group II 16 (53.3 %) hailed from rural area.

When discussing educational status of the mother**,** in interventional group I, majority of the subjects 17 (56.7 %) studied upto primary education. In interventional group –II 12 (40.0%) had non formal education.

Regarding the occupations of mothers in interventional group I, majority of the subjects 19 (63.3 %) were house wife. In interventional group II 18 (60.0%) were house wife.

When discussing educational status of the father in interventional group I, majority of the subjects 14 (46.6 %) studied upto primary school education. In interventional group II 17 (56.6%) studied upto primary school education.

Regarding the occupation of fathers in interventional group I, majority of the subjects 18 (60.0 %) were moderate worker .In interventional group II 16 (53.3 %) were moderate worker.

With respect of the type of family in interventional group I, majority of the subjects 19 (63.7%) belongs to nuclear family .In interventional group II 20 (66.7 %) belongs to nuclear family.

While comparing the family income per month in interventional group I, majority of the subjects 11 (36.7 %) were earned between Rs 4001 – 6000. In interventional group II 12 (40.0 %) were earned more than above Rs 6000.

With stating the duration of admission in interventional group I, majority of the subjects 13 (43.33 %) were hospitalized between 2-4 days. In interventional group II 11 (36.67 %) were hospitalized between Less than 2 days.

While considering the site of IV cannula in interventional group I, majority of the subjects 14 (46.67 %) were radial vein. In interventional group II 14 (46.67%) were radial vein,

According to BMI in interventional group I, majority of the subjects 21(70.00 %) had normal BMI. In interventional group II 24 (80.00 %) had normal BMI.

On the basis of Intravenous catheter needle size in interventional group I, majority of the subjects 16 (53.33 %) had 24 gauge. In interventional group II 18 (60.00 %) had 24 gauge.

Based on type of fluids in interventional group I, majority of the subjects 26 (86.67%) were receiving crystalloids. In interventional group II 23 (76.67 %) were receiving crystalloids.

On the basis on type of drugs in interventional group I, majority of the subjects 11 (36.67%) were receiving multi vitamins. In interventional group II 20 (66.67%) were receiving antibiotics.

When identifying the use of restraints in interventional group I, majority of the subjects 20 (66.67 %) were not had restraint in interventional group II 17 (56.67 %) were not had restraint.

Based on Mode of Infusion in interventional group I, majority of the subjects 12 (40.00%) were receiving bolus. In interventional group II 14 (46.67%) were receiving bolus.

According to device of infusion in interventional group I, majority of the subjects 18 (60.00 %) were in Microdrip set. In interventional group II 15 (50.00%) were in Microdrip set.

While denoting the total amount of fluid flushed in 24 hours in interventional group I, majority of the subjects 14 (46.67%) were had 100- 200mlof fluid flushed. In interventional group II 10 (33.33 %) were had less than 100ml of fluid flushed.

Considering the duration of Infusion in interventional group I, majority of the subjects 11 (36.67%) were received 5-6 hours / day. In interventional group II 13 (43.33%) of them were received 2-4 hours / day.

With regard to number of days in IV situ in interventional group I, majority of the subjects 13 (43.33%) were had 3- 5 days. In interventional group II 13 (43.33 %) were had 3- 5 days.

While comparing the frequency of changing catheter site dressing in interventional group I, majority of the subjects 19 (63.34 %) were changed once in 3 days. In interventional group II 23 (76.66 %) were changed once in 3 days.

Regarding treatment for chronic disease in interventional group I, majority of the subjects 26 (86.67%) had not taken treatment for chronic disease. In interventional group II 27 (90.00 %) had not taken treatment for chronic disease.

Based on Suffering from Infection in interventional group I, majority of the subjects 23 (76.67 %) were not suffering infection. In interventional group II 25 (83.33 %) were not suffering from infection.

In Interventional group I, the pre test level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13(43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level mean score was 2.70 with the standard deviation 1.12.

In Interventional group II, the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis,

remaining 3 (10.00%) had severe phlebitis and none of them had normal level mean score was 2.87 with the standard deviation 1.04 and mean difference was 0.17.

In Interventional group I, the pre test level of phlebitis, majority of the subjects 15 (50.00%) had mild phlebitis, 13(43.33%) had moderate phlebitis, remaining 2 (6.67%) had severe phlebitis and none of them had normal level. Whereas the Post test level of phlebitis, majority of the subjects 19(63.33%) had mild phlebitis, 6(20.00%) had moderate phlebitis, remaining 15 (16.67%) had severe phlebitis and none of them had normal level In $\chi 2=14.36$, showed a difference in the pre test ad post test level of phlebitis among interventional group-I (Fresh Aloevera).

In interventional group II, the pre test level of phlebitis, majority of the subjects 14 (46.67%) had moderate phlebitis, 13 (43.33%) had mild phlebitis, remaining 3 (10.00%) had severe phlebitis and none of them had normal level . whereas the post test, level of phlebitis majority of the subjects 15 (50.00%) had mild phlebitis, 13 (43.33%) had normal level, remaining 2(6.67%) had moderate phlebitis and None of them had severe level of phlebitis In $\chi 2=14.36$, showed a difference in the pre test ad post test level of phlebitis among Interventional group II (Glycerine magnesium sulphate).

In Interventional group I, the pre test mean score was 2.70 with % of mean score 54.00%. where as the post test mean score was 1.70 with % of mean score 34.00% and the percentage of reduction score was 20.00%.

In Interventional group II, the pre test mean score was 2.87 with % of mean score 57.4%. where as the post test mean score 1.03% with % of mean score 20.60% and the percentage of reduction score was 36.8%.

The difference shows that effect of Glycerine magnesium sulphate on children with phlebitis than fresh Aloevera.

In order to find out association between the level of phlebitis and selected socio demographic variable and clinical variables in Among Interventional group I (Fresh Aloevera) Chi square analysis reveals that there was a significant association between children with phlebitis and their fathers had primary education (χ2=18.90 P=0.01), duration of admission 2-4 days (χ2=10.44 P=0.03), with Radial vein cannulation (χ2=10.06 P=0.03) and also had normal BMI (χ2=11.04P=0.03) and who had change the dressing once in 3 days (χ2=11.48 P=0.02) and free from infection (χ2=8.07 P=0.02) All other variables was not significantly associated.

In order to find out association between the level of phlebitis and selected socio demographic variable and clinical variables in Among interventional group II (Glycerine magnesium sulphate) Chi square analysis reveals that there was a significant association between the children with phlebitis and their mother's educational status was non formal education (χ2=16.10 P=0.01), duration of admission less than 2 days (χ2=10.87 P=0.02) , with radial vein cannulation (χ2=22.89 P=0.001), less than 3 days of IV situ (χ2=13.88 P=0.01) and changing the dressing daily (χ2=30.48 P=0.001) and disease suffering from infection (χ2=6.00 P=0.05) All other variables was not significantly associated.

6.3 Conclusion

The study findings revealed that group II had more (36.8%) reduction of phlebitis level than group I. But when comparing both the groups, Glycerine magnesium sulphate is effective than fresh Aloevera to reduce the level of phlebitis.

6.4 Implications of the study

The investigator had drawn several implications from this study for various areas such as nursing practice, nursing education, nursing administration and nursing research.

Implications for nursing practice

- ❖ Nurse must practice sterile procedure for intravenous cannulation among children in order to avoid phlebitis.
- ❖ Nurse should monitor periodically Intravenous administration especially for children and also identify the signs and symptoms of phlebitis.
- ❖ Nurse can aware about the mechanism of action about topical application of fresh Aloevera and glycerine magnesium sulphate to children with phlebitis.

Implications for nursing education

- ❖ Nurse educator encourages the nursing students to identify the warning signs of phlebitis among children who is an Intravenous cannulation.
- ❖ Nurse educator motivates the students to use the modified visual infusion phlebitis scale in their clinical practice.
- ❖ The nurse educator teaches the benefit of glycerine magnesium sulphate on phlebitis among children.
- ❖ The frequency of phlebitis care is an area of controversy and may depend more on the children's condition

Implications for nursing research

- ❖ A study can be done with large samples and also apply the fresh Aloevera gel among phlebitis children for long duration.
- ❖ Based on the study research can be conducted to assess the level of phlebitis by Infusion nursing society phlebitis scale

- The study findings will encourage the further research studies on the age group between (1-18years)

Implications for nursing administration

- Nurse administrator may pay special attention to student nurse to educate and evaluate their intravenous procedure during their clinical practice.
- Nurse administrator can encourage the nurses to assess the level of phlebitis to all the children and make it as one of the assessment procedure.
- Articles and materials needed for applying Aloevera gel or glycerine magnesium sulphate must be made available by the Administrator in the department of paediatrics.
- Nurse administrator should motivate the nurses to gain knowledge on complication of phlebitis and encourage them to identify the symptoms of phlebitis by using modified visual infusion phlebitis scale.
- Nurse administrator can arrange in service education among pediatric nurses regarding importance and complication of Intravenous cannulation.

6.5 Recommendations

- A similar study can be replicated with larger sample for better generalization
- A comparative study can be done between Ichthammol glycerine dressing and hirudoid ointment to evaluate the best.
- A study can be conducted to assess the knowledge, attitude and practice of nursing staff regarding management of phlebitis.
- A similar study can be conducted in other population like critically ill Children in Critical care unit.

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APPENDICES

APPENDIX – I

Ethical committee approval letter

MADURAI MEDICAL COLLEGE
MADURAI, TAMILNADU, INDIA -625 020
(Affiliated to The Tamilnadu Dr.MGR Medical University, Chennai, Tamil Nadu)

Prof Dr V Nagaraajan MD MNAMS DM (Neuro) DSc.,(Neurosciences) DSc (Hons)
Professor Emeritus in Neurosciences, Tamil Nadu Govt Dr MGR Medical University
Chairman, IEC

Dr.M.Shanthi, MD.,
Member Secretary,
Professor of Pharmacology,
Madurai Medical College, Madurai.

Members

1. Dr.V.Dhanalakshmi, MD,
Professor of Microbiology &
Vice Principal,
Madurai Medical College

2. Dr.Sheela Mallika rani, M.D.,
Anaesthesia , Medical Superintendent Govt. Rajaji Hosptial, Maudrai

3.Dr.V.T.Premkumar,MD(General Medicine) Professor & HOD of Medicine, Madurai Medical & Govt. Rajaji Hospital, College, Madurai.

4.Dr.S.R.Dhamotharan, MS.,
Professor & H.O.D i/c, Surgery, Madurai Medical College & Govt. Rajaji Hosptial, Madurai.

5.Dr.G.Meenakumari, MD.,
Professor of Pathology, Madurai Medical College, Madurai

6.Mrs.Mercy Immaculate Rubalatha, M.A., B.Ed., Social worker, Gandhi Nagar, Madurai

7.Thiru.Pala.Ramasamy, B.A.,B.L.,
Advocate, Palam Station Road, Sellur.

8.Thiru.P.K.M.Chelliah, B.A.,
Businessman,21, Jawahar Street, Gandhi Nagar, Madurai.

ETHICS COMMITTEE CERTIFICATE

Name of the Candidate	:	R.Lalithambigai
Course	:	M.Sc., Child Health Nursing
Period of Study	:	2016-2018
College	:	MADURAI MEDICAL COLLEGE
Research Topic	:	A study to evaluate the effectiveness of application of fresh aloevera versus glycerine magnesium sulphate on children with phlebitis at Government Rajaji Hospital, Madurai.
Ethical Committee as on	:	31.03.2018

The Ethics Committee, Madurai Medical College has decided to inform that your Research proposal is accepted.

Member Secretary Chairman Dean / Convenor

Prof Dr V Nagaraajan
M.D., MNAMS, D.M., Dsc.,(Neuro), Dsc (Hon)
CHAIRMAN
IEC - Madurai Medical College
Madurai

DEAN
Madurai Medical College
Madurai-20

16 MAY 2018

APPENDIX – II

Content validity certificates

Content Validity Certificate

This is to certify that tool

SECTION A – Sociodemographic Date

SECTION B – Clinical Variables

SECTION C – Visual Infusion Phlebitis scale

Prepared for data collection by Mrs.R.Lalithambigai, II year M.Sc (N) student, College of Nursing, Madurai Medical College, Madurai - 20, who has undertaken the study field on thesis entitled **"A Study to evaluate the effectiveness of Application of Fresh Aloevera Versus Glycerine Magnesium Sulphate On Children With Phlebitis At Government Rajaji Hospital, Madurai-20"** has been validated by me.

Signature of the Expert

DIRECTOR I/C
INSTITUTE OF CHILD HEALTH &
RESEARCH CENTRE
GOVT. RAJAJI HOSPITAL
MADURAI-625020.

NAME:

DESIGNATION:

ADDRESS:

Content Validity Certificate

This is to certify that tool

SECTION A – Sociodemographic Date

SECTION B – Clinical Variables

SECTION C – Visual Infusion Phlebitis scale

Prepared for data collection by Mrs.R.Lalithambigai, II year M.Sc (N) student, College of Nursing, Madurai Medical College, Madurai - 20, who has undertaken the study field on thesis entitled **"A Study to evaluate the effectiveness of Application of Fresh Aloevera Versus Glycerine Magnesium Sulphate On Children With Phlebitis At Government Rajaji Hospital, Madurai-20"** has been validated by me.

Signature of the Expert

NAME: Dr. M.S. RAJARAJESWARAN MD DM

DESIGNATION: PROF OF PAEDIATRICS

ADDRESS: PROF OF PAEDIATRICS.
GOVT RAJAJI HOSPITAL.
MADURAI.

Professor of Paediatrics
Institute of Child Health &
Research Centre.
Govt. Rajaji Hospital, Madurai-20

Content Validity Certificate

This is to certify that tool

SECTION A – Sociodemographic Date

SECTION B – Clinical Variables

SECTION C – Visual Infusion Phlebitis scale

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22/08/18

Signature of the Expert

NAME: Dr.A.HELEN M PERDITA.

DESIGNATION: Principal

ADDRESS: Madurai Apollo CON,
Eliyarpathy village
Thiruparankundram Union
Madurai- 22

PRINCIPAL
MADURAI APOLLO COLLEGE OF NURSING
ELIYARPATHI VILLAGE
MADURAI SOUTH TALUK, MADURAI-22

Content Validity Certificate

This is to certify that the tool

SECTION-A – Sociodemographic data

SECTION-B - Visual Infusion Phlebitis score

Prepared for data collection by Mrs.R.Lalithambigai, II Year M.Sc(N) Student, College of Nursing, Madurai Medical College, Madurai-20., who has undertaken the study field on thesis entitled "Assess the Effectiveness of Topical Application of fresh Aloevera versus Glycerine Magnesium Sulphate on Children with Phlebitis "at GRH Madurai-20"has been valid by me

N. Jessy
Signature of the Expert

Name : Prof. Dr. N. Jessie.

Designation : Professor cum HOD.

Date : CSI Jeyaraj Annapackiam College of Nursing, Madurai-4.

Content Validity Certificate

This is to certify that tool

SECTION A – Sociodemographic Date

SECTION B – Clinical Variables

SECTION C – Visual Infusion Phlebitis scale

Prepared for data collection by Mrs.R.Lalithambigai, II year M.Sc (N) student, College of Nursing, Madurai Medical College, Madurai - 20, who has undertaken the study field on thesis entitled **"A Study to evaluate the effectiveness of Application of Fresh Aloevera Versus Glycerine Magnesium Sulphate On Children With Phlebitis At Government Rajaji Hospital, Madurai-20"** has been validated by me.

R. Jothilakshmi
Signature of the Expert

NAME: R. JOTHILAKSHMI

DESIGNATION: Professor,

ADDRESS: Sacred Heart nursing college, madurai-20.

R. JOTHI LAKSHMI, M.Sc.,(N)Ph.D.
Associate Professor
Sacred Heart Nursing College
MADURAI - 20

APPENDIX – III

INFORMED CONSENT FORM

NAME : DATE :

Here I am acknowledging that information regarding the project study topic was explain to me and the positive reason was pointed out. I am voluntarily willing to participate in the study. At any time I am free to exclude from the study and promised that my all personal information should be kept in confidential.

Signature of the participants

ஒப்புதல் அறிக்கை

பெயர்: தேதி:

எனக்கு இந்த ஆய்வைப் பற்றிய முழு விவரம் விளக்கமாக எடுத்துரைக்கப்பட்டது. இந்த ஆய்வில் பங்கு பெறுவதில் உள்ள நன்மைகள் மற்றும் தீமைகள் பற்றி நான் புரிந்துகொண்டேன். நான் இந்த ஆய்வில் தானாகவே முன் வந்து பங்கு பெறுகின்றேன். மேலும் எனக்கு இந்த ஆய்வில் இருந்து எந்த நேரமும் விலகிக் கொள்ள முழு அனுமதி வழங்கப்பட்டுள்ளது. என்னுடைய சிகிச்சை ஆவணங்களைப் பார்வையிட்டு அதில் உள்ள விவரங்களை ஆய்வில் பயன்படுதிக் கொள்ள அனுமதி அளிக்கின்றேன். என்னுடைய பெயர் மற்றும் அடையாளங்கள் ரகசியமாக வைத்துக் கொள்ளப்படும் என்றும் எனக்கு உறுதியளிக்கப்பட்டுள்ளது.

கையொப்பம்

APPENDIX – IV

Letter seeking and granting permission to conduct the study

From

R.Lalithambigai

M.Sc (N) II year student

College of Nursing

Madurai Medical College

Madurai – 20

To

The Director I/c

Institute of Child Health and Research Centre

Government Rajaji Hospital

Madurai

Through the proper channel,

Respected Sir,

Sub: College of Nursing, Madurai Medical College, Madurai – M.Sc (N) II year Child Health Nursing Student – Permission for conducting Pilot study and Main study from 21st May onwards in Pediatric Medical Ward at GRH, Madurai request – regarding.

.....

As per the Indian Nursing Council and The Tamil Nadu Dr.M.G.R Medical University curriculum requirement of M.Sc Nursing candidates are required to conduct a dissertation study for the partial fulfillment of the course in their respective departments.

I wish to conduct a study topic **"A Study to evaluate the effectiveness of Application of Fresh Aloevera Vs Glycerine Magnesium Sulphate on Children with Phlebitis at GRH, Madurai".** I assure that I will not interfere with the routine activities of the department.

Hence, I kindly request you to consider my requisition and permit me to conduct the study in this setting.

Thanking you,

Place: Madurai

Date: 18.05.2018

Yours Obediently

(R.Lalithambigai)

Forwarded
S.P
18/5/18

Study may be conducted

APPENDIX – V

Research Tool – English

SOCIODEMOGRAPHIC VARIABLES

1. Age in years

a) 1- 3 years.

b) 3 - 6 years.

c) 6- 9 years

d) 9-12 years

2. Sex

a) Male

b) Female

3. Religion

a) Hindu

b) Christian

c) Muslim

d) Other

4. Place of domicile

a) Urban

b) Rural

5. Educational status of the mother

a) Non formal education

b) Primary education

c) secondary education

d) Graduate

6. Occupation of the Mother

a) Sedentary worker

b) Moderate worker

c) Heavy worker

d) Housewife

7. Educational status of the Father

a) Non formal education

b) Primary education

c) secondary education

d) Graduate

8. Occupation of the father

a) Sedentary worker

b) Moderate worker

c) Heavy worker

9. Type of family

a) Joint family

b) Nuclear family

10. Family Income

a) Rs.2000 below

b) Rs.2001-Rs.4000

c) Rs4001-Rs.6000

d) Above 600

CLINICAL VARIABLES

11) Duration of admission ☐

a) Less than 2 days

b) 2-4 days

c) 4-6 days

12) The site of IV cannulation ☐

a) Radial vein

b) Median vein

c) Median cubital vein

13) Body mass index ☐

a) Normal

b) Low

c) High

14) Intravenous catheter Needle size ☐

a) 24 Gauge

b) 22 Gauge

c) 18Gauge

15) Type of Fluids ☐

a) Crystalloids

b) Colloids

16) Types of drugs ☐

a) Antibiotics

b) Multivitamins

c) Mixed

17) Use of restraints ☐

a) Yes

b) No

18) Mode of infusion ☐

a) Bolus

b) Short time

c) Long duration

19) Device of Infusion

a)Infusion drip

b) Microdrip set

c)Syringe infusion

20) Total amount of fluids in fused in 24hrs

a)<100ml

b)100-200ml

c)>500ml

21) Duration of infusion

a)<2hrs/day

b)2-4hrs/day

c)5-6hrs/day

d)>6hrs/day

22) Number of days in IV situ

a)Less than 3 days

b)3-5 days

c)5-7 days

23) Frequency of changing catheter site dressing

a) Daily

b) 3days once

c) 6days once

24) Have you taken treatment for chronic disease

a) Yes

b) No

25) Did you suffer from any infection previously

a) Yes

b) No

Name of the child : Age: Ward:

Ip No : Sex:

MODIFIED VISUAL INFUSION PHLEBITIS SCALE

LEVEL OF PHLEBITIS	SCORE	DESCRIPTION
NONE	0	IV site appears healthy
MILD	(1-2)	**one of the following evident** • Slight pain at IV site Redness near IV site **Two of the following are evident** • Pain erythema swelling
MODERATE	(3-4)	**All of the following signs are evident** • Pain along the path of the cannula Erythema Induration **All of the following signs evident and extensive** • Pain along the path of the cannula Erythema Induration Palpable venous cord
SEVERE	5	**All of the following signs are evident and extensive** • Pain along the path of the cannula Erythema Induration Palpable venous cord pyrexia

APPENDIX – VI

Research Tool – Tamil

தன்னிலை விபரக்குறிப்பு

1) வயது

அ) 1-3

ஆ) 4-6

இ) 7-9

ஈ) 10-12

2) இனம்

அ) ஆண்

ஆ) பெண்

3) மதம்

அ) இந்து

ஆ) கிறிஸ்துவர்

இ) இஸ்லாமியர்

ஈ) பிறமதங்கள்

4) குடியிருப்பு

அ) நகரம்

ஆ) கிராமம்

5)தந்தையின் கல்வித்தகுதி

அ) படிக்கவில்லை

ஆ) ஆரம்பக்கல்வி

இ) மேல்நிலைப்பள்ளி

6) தாயின் கல்வித்தகுதி

அ) படிக்கவில்லை

ஆ) ஆரம்பக்கல்வி

இ) மேல் நிலை

ஈ) பட்டப்படிப்பு

7) தந்தையின் தொழில்

அ) உடல் உழைப்பு இல்லாத தொழில்

ஆ) மிதமானத் தொழில்

இ) கனரகத் தொழில்

8) தாயின் தொழில்

அ)உடல் உழைப்பு இல்லாத தொழில்

ஆ)மிதமானத் தொழில்

இ)கனரகத் தொழில்

9) குடும்பவகை

அ) கூட்டுக் குடும்பம்

ஆ) தனிக் குடும்பம்

10) மாத வருமானம்

அ) ரூ2000 குறைவாக

ஆ) ரூ 2001-4000

இ) ரூ 4001-6000

ஈ) ரூ6000 மேல்

பகுதி-II

1) காலசேர்க்கை

அ) 2 நாட்களுக்கு கீழ்

ஆ) 2-4 நாட்கள்

இ) 4-6 நாட்களுக்கு மேல்

2) நரம்புமண்டலத்தின் இடம்

அ) ரேடியல் நரம்பு

ஆ) நடுத்தர நரம்பு

இ) நடுத்தர கத்திரி நரம்பு

3) உடல் பருமன் சுட்டு

அ) சாதாரண பருமன்

ஆ) குறைந்த பருமன்

இ) அதிக பருமன்

4) நரம்புவடிக்குழாய் ஊசி அளவு

அ) 20 பாதை

ஆ) 22பாதை

இ) 24 பாதை

5) திரவங்கள் வகை

அ) பளிங்குருவப் பொருள்

ஆ) கூழ்ப்பொருள்

6) மருத்து வகைகள்

அ)ஆண்டிபயாடிக்

ஆ)மல்டிவிட்டமின்

இ)கலப்பு மருத்து

7) கட்டுப்பாடு பயன்படுத்தப்பட்டுள்ளதா

அ) ஆம்

ஆ) இல்லை

8) உட்செலுத்தும் முறை

அ) பொலஸ் முறை

ஆ) குறுகிய நேரம்

இ) அதிக நேரம்

9) உட்செலுத்தும் சாதனம்

அ) மேக்ரோ டிரிப் செட்

ஆ) மைக்ரொ டிரிப் செட்

இ) ஊசி மூலம் உட்செலுத்துதல்

10) 24 மணிநேரத்திற்குள் உட் செலுத்தும் திரவத்தின்

அ) <100ml

ஆ) 100-200ml

இ) >500ml

11) உட்செலுத்தும் காலம்

அ) <24 மணி/நாள்

ஆ) 2-4 மணி/நாள்

இ) 5-6 மணி/நாள்

ஈ) > 6hrs மணி/நாள்

12) நரம்புவலியாக போடப்பட்ட ஊசியின் நாட்கள்

அ) 3 நாட்களுக்கு குறைவு

ஆ) 3-5 நாட்கள்

இ) 5-7 நாட்களுக்கு ஒரு முறை

13) வடிகுழாய் மேல் போடப்பட்டுள்ள டிரஸ்லிங் மாற்ற கால அளவு

அ) தினசரி

ஆ) 3 நாட்களுக்கு ஒரு முறை

இ) 6 நாட்களுக்கு ஒரு முறை

14) நீங்கள் நாள்பட்ட நோய்யிற்கு சிகிச்சை பெற்றிருக்கிறீர்களா ?

அ) ஆம்

ஆ) இல்லை

15) நீங்கள் ஏதேனும் தொற்று கிருமிகளால் பாதிக்கப்பட்டிருக்கிறீர்களா?

அ) ஆம்

ஆ) இல்லை

APPENDIX – VII

English Editing Certificate

TO WHOM SOVER IT MAY CONCERN

This is to certify the dissertation "A Study to assess the effectiveness of topical application of fresh aloevera versus Glycerine Magnesium Sulphate on Children with Phlebitis "at GRH Madurai-20". Done by Mrs.R.Lalithambigai, II Year M.sc(N) Student, College of Nursing, Madurai Medical College, Madurai-20. Has been edited for English language appropriateness.

Name : R. VINNIE

Designation : B.T. Asst

Date : 22.06.18

Vinnie.R
22/6/18

CORPORATION ELANGO HR SEC SCHOOL
Date. 22/6/18
SHENOYNAGAR MADURAI

CORPORATION ELANGO HR SEC SCHOOL
Date. 22/6/18
SHENOYNAGAR MADURAI

APPENDIX – VIII

Tamil Editing Certificate

TO WHOM SOVER IT MAY CONCERN

This is to certify the dissertation "A Study to assess the effectiveness of topical application of fresh aloevera versus Glycerine Magnesium Sulphate on Children with Phlebitis "at GRH Madurai-20". Done by Mrs.R.Lalithambigai, II Year M.sc(N) Student, College of Nursing, Madurai Medical College, Madurai-20. Has been edited for Tamil language appropriateness.

K. Sowndram

Name : K. SOWNDRAM.

Designation : P.G. Assitant (Tamil)

Date : 22.6.2018

CORPORATION ELANGO HR SEC SCHOOL Date 22/6/18 SUBRAMANIYAPURAM MADURAI

CORPORATION ELANGO HR SEC SCHOOL Date 22/6/18 SUBRAMANIYAPURAM MADURAI

APPENDIX – IX

Intervention -I

Topical Application (Fresh Alovera Gel) Procedure

It is the application of medication locally to the skin or mucous membrane in the form of ointments application of Fresh Aloevera gel for group- I to reduce the level of phlebitis among children (1 -12 years)

Objectives of Topical Application

- To maintain the integrity of mucous membrane .
- To prevent the mucous membrane from becoming dry and cracked.
- To warm an affected area and also for muscle relaxation
- To relieve itching.
- To promote the comfort of the children
- It relieves the pain .
- To prevent complication arises due to phlebitis.
- To prevent infection
- To promote healing of wound and also withdraw pus and exudates by osmosis.
- Is an effective in preserving skin circulation
- Is soften the skin anti-inflammatory activity,
- Is an moisturising and antiseptic effects

ARTICLES NEEDED FOR TOPICAL APPLICATION

Sterile tray containing

ARTICLES	PURPOSES
Bowel with gauze piece	To carry the gauze pieces/rag
Thumb forceps	It helps to pick the gauze rag / gauze piece
Sterile blade	It helps to remove the bark of aloevera
BP handler	To place the sterile blade
Kidney tray	To collect the waste

Clean tray containing

ARTICLES	PURPOSES
Fresh Aloevera gel	To treat the phlebitis
Sterile gloves	To prevent microorganism
Adhesive tape	To secure the gauze pad

PROCEDURE OF TOPICAL APPLICATION

SNO	PROCEDURE	RATIONALE
1	Assess level of phlebitis to the children	To know the status of phlebitis level
2	Explain the procedure to the patient and/or to the relatives And obtain consent	Reduce the anxiety of children and care giver.
3	Wash hands and don gloves on dominant hand	Prevent spread of micro organism
4	Using a sterile blade	To remove the bark of Aloevera and obtained pulp
5	Take a small quantity of Aloevera gel in gloved hand with use of gauze piece .Smear it evenly over skin using long strokes in the direction of hair growth.	Smearing medication evenly on the skin ensures uniform distribution
6	Check for hypersensitivity reaction	It helps to prevent allergy
7	Apply dressing over the skin	It prevent the further infection
8	Replace all the articles after Discarding the waste, remove gloves, discard it and wash hands	Prevents transfer of microorganisms
9	Record date, time, ointment used, condition of phlebitis	To have proper document

Intervention -II

Topical Application (Glycerine magnesium sulphate) Procedure

It is the application of medication locally to the skin or mucous membrane in the form of ointments application of Glycerine magnesium sulphate for group- II to reduce the level of phlebitis among children (1 -12 years)

Objectives of Topical Application

- To maintain the integrity of mucous membrane .
- To prevent the mucous membrane from becoming dry and cracked.
- To promote the comfort of the children
- It relieves the pain .
- To prevent complication arises due to phlebitis.
- To prevent infection
- To promote healing of wound and also withdraw pus and exudates by osmosis.
- Is soften the skin anti-inflammatory activity,
- Is an moisturising effects

ARTICLES NEEDED FOR TOPICAL APPLICATION

Sterile tray containing

ARTICLES	PURPOSES
Bowel with gauze piece	To carry the gauze pieces/rag
Thumb forceps	It helps to pick the gauze rag / gauze piece
Kidney tray	To collect the waste

Clean tray containing

ARTICLES	PURPOSES
Glycerine magnesium sulphate	To treat the phlebitis
Sterile gloves	To prevent microorganism
Adhesive tape	To secure the gauze pad

SNO	PROCEDURE	RATIONALE
1	Assess level of phlebitis to the children	To know the status of phlebitis level
2	Explain the procedure to the patient and/or to the relatives And obtain consent	Reduce the anxiety of children and care giver.
3	Wash hands and don gloves on dominant hand	Prevent spread of micro organism
4	Take a small quantity of Glycerine magnesium sulphate in gloved hand with use of gauze piece .Smear it evenly over skin using long strokes in the direction of hair growth.	Smearing medication evenly on the skin ensures uniform distribution
6	Check for hypersensitivity reaction	It helps to prevent allergy
7	Apply dressing over the skin	It prevent the further infection
8	Replace all the articles after Discarding the waste, remove gloves, discard it and wash hands	Prevents transfer of microorganisms
9	Record date, time, ointment used, condition of phlebitis	To have proper document

APPENDIX – X

Photographs